EXHIBIT H

PUBLIC VERSION

UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C. 20436

In the Matter of **CERTAIN GAMING AND ENTERTAINMENT CONSOLES, RELATED SOFTWARE, AND COMPONENTS THEREOF**	**Investigation No. 337-TA-752**

INITIAL DETERMINATION

Administrative Law Judge David P. Shaw

Pursuant to the notice of investigation, 75 Fed. Reg. 80843 (2010), this is the Initial Determination in *Certain Gaming and Entertainment Consoles, Related Software, and Components Thereof*, United States International Trade Commission Investigation No. 337-TA-752.

It is held that a violation of section 337 of the Tariff Act, as amended, has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation, of certain gaming and entertainment consoles, related software, or components thereof that infringe asserted claims 1 and 12 of U.S. Patent No. 6,069,896; asserted claims 7, 8, and 10 of U.S. Patent No. 7,162,094; claim 2 of U.S. Patent No. 6,980,596; and asserted claims 12 and 13 of U.S. Patent No. 5,357,571. A violation of section 337 has not occurred with respect to asserted claim 1 of U.S. Patent No. 6,980,596, or asserted claims 6, 8, or 17 of U.S. Patent No. 5,319,712.

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The following abbreviations may be used in this Initial Determination:

ALJ	-	Administrative Law Judge
CDX	-	Complainants' Demonstrative Exhibit
CPX	-	Complainants' Physical Exhibit
CX	-	Complainants' Exhibit
Dep.	-	Deposition
EDIS	-	Electronic Document Imaging System
JPX	-	Joint Physical Exhibit
JX	-	Joint Exhibit
RDX	-	Respondent's Demonstrative Exhibit
RPX	-	Respondent's Physical Exhibit
RWS	-	Rebuttal Witness Statement
RX	-	Respondent's Exhibit
Tr.	-	Transcript
WS	-	Witness Statement

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I. Background

A. Institution of the Investigation; Procedural History

By publication of a notice in the *Federal Register* on May 21, 2010, pursuant to subsection (b) of section 337 of the Tariff Act of 1930, as amended, the Commission instituted this investigation to determine:

> [W]hether whether there is a violation of subsection (a)(1)(B) of section 337 in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain gaming and entertainment consoles, related software, and components thereof that infringe one or more of claims 6, 8-10, and 17 of the '712 patent [(U.S. Patent No. 5,319,712)]; claims 9-18 of the '571 patent [(U.S. Patent No. 5,357,571)]; claims 1-3 and 12 of the '896 patent [(U.S. Patent No. 6,069,896)]; claims 1-3, 7, and 8 of the '596 patent [(U.S. Patent No. 6,980,596)]; and claims 5-8 and 10 of the '094 patent [(and U.S. Patent No. 7,162,094)], and whether an industry in the United States exists as required by subsection (a)(2) of section 337.

75 Fed. Reg. 80843 (2010).

The complainants are: Motorola Mobility, Inc. of Libertyville, Illinois ("Motorola Mobility"); and General Instrument Corporation of Horsham, Pennsylvania ("General Instrument") (collectively, Motorola Mobility and General Instrument are referred to as "Motorola" or "complainants"). The Commission named as the respondent: Microsoft Corporation of Redmond, Washington ("Microsoft" or "respondent").[1] *Id.*

Initially, the target date for completion of this investigation was set at 17 months, *i.e.*, May 23, 2012. Order No. 5 (initial determination setting target date); Comm'n

[1] Although the Commission named the Office of Unfair Import Investigations ("OUII") as a party in the investigation, OUII withdrew from participation in accordance with the Commission's Strategic Human Capital Plan. *See* 75 Fed. Reg. 80843 (2010); Letter from OUII to the Administrative Law Judge (Mar. 3, 2011).

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Notice Not to Review (Feb. 10, 2011). Subsequent to revised procedural schedules, and reassignment of the investigation to the undersigned (the third administrative law judge to preside over the investigation), pursuant to 19 C.F.R. §§ 210.51(a) and 210.42(a)(1)(i), the target date was extended by three months, *i.e.*, to August 23, 2012, and thus the due date for the Initial Determination on violation is April 23, 2012. Order No. 19 (initial determination setting target date); Notice of Comm'n Not to Review (Nov. 21, 2011).

Two two-hour tutorial sessions were held in this investigation, the first on December 13, and the second on December 21, 2011. *See* Order No. 23. The first session concerned the '596 patent and the '094 patent. Tutorial Tr. 7.[2] The second session concerned the '571 patent, the '712 patent and the '896 patent. Tutorial Tr. 108.

A prehearing conference was held on January 9, 2012, with the evidentiary hearing in this investigation commencing immediately thereafter. The hearing concluded on January 20, 2012. *See* Order Nos. 21 and 26; Tr. 1-2724. The parties were requested to file post-hearing briefs not to exceed 300 pages in length, and to file reply briefs not to exceed 100 pages in length. Tr. 17-20, 372, 2422.

B. The Parties; Assignment of Patents

Motorola Mobility is a corporation organized under the laws of the State of Delaware, having a principal place of business in Libertyville, Illinois. General Instrument is a corporation organized under the laws of the State of Delaware, having a principal place of business in Horsham, Pennsylvania. Motorola Mobility and General

[2] The two tutorial sessions were paginated continuously. Thus, the transcript for the first session covers pages 1 through 101; and the transcript for the second session covers pages 102 through 200.

Instrument are subsidiaries of Motorola Mobility Holdings, Inc. CX-715C (Dailey WS) at 3-4; CX-11 at 1, 4, 10; Compls. Br. at 4.

Microsoft is a corporation organized under the laws of the State of Washington, having its principal place of business in Redmond, Washington. Resp. to Complaint at 5, ¶ 18; Compls. Br. at 4.

The '896 patent, the '571 patent and the '721 patent are assigned to Motorola Mobility. CX-1; CX-2; CX-4; CX-5. Both the '596 patent and the '094 patent are assigned to General Instrument. CX-6; CX-7.

C. The Accused Products

The accused products in this investigation are Microsoft Xbox 360 consoles and accessories. The accused products are listed in a joint filing that was required by Ground Rule 12 (requiring "a comprehensive joint outline of the issues to be decided in the final Initial Determination on violation").[3] By listing a product in the joint filing, Microsoft has not admitted infringement. Nevertheless, the joint filing indicates the final extent of Motorola's accusations in this investigation. *See* Parties' Joint Submission Pursuant to GR12 (EDIS Doc. No. 471326) ("Ground Rule 12 Filing").

With respect to the '896 patent, Motorola asserts claims 1 and 12, and accuses all versions and configurations of the Microsoft Xbox 360 console imported into the United

[3] Ground Rule 12 provides: "On the same day the initial post-hearing briefs are due, the parties shall file a comprehensive joint outline of the issues to be decided in the final Initial Determination on violation. Moreover, the claim terms briefed by the parties must be <u>identical</u>. The construction of any part of a disputed claim term that is not briefed is waived." Ground Rule 12 (attached to Order No. 20 (Issuing New Ground Rules)); *see* Tr. 2420-2423 (concerning Ground Rule 12).

States and/or sold after importation into the United States on or after December 17, 2010, and all wireless accessories.[4] *Id.* at 4.

With respect to the '094 patent, Motorola asserts claims 7, 8 and 10, and accuses all versions and configurations of the Microsoft Xbox 360 console imported into the United States and/or sold after importation into the United States on or after December 17, 2010. *Id.* at 5.

With respect to the '596 patent, Motorola asserts claims 1 and 2, and accuses all versions and configurations of the Microsoft Xbox 360 console imported into the United States and/or sold after importation into the United States on or after December 17, 2010. *Id.* at 6.

With respect to the '571 patent, Motorola asserts claims 12 and 13, and accuses all versions and configurations of the Microsoft Xbox 360 console imported into the

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[4] As stated in the joint filing, Motorola accuses:

All versions and configurations of the Microsoft Xbox 360 console imported into the United States and/or sold after importation into the United States on or after December 17, 2010, including but not limited to the Xbox 360 4 GB Console and the Xbox 360 250 GB Console[., sic]; as well as all wireless accessories, including but not limited to the Xbox 360 Wireless Controller, Xbox 360 Wireless Controller Play and Charge Kit, Wireless Controller with Transforming D-Pad and Play and Charge Kit, Xbox 360 Halo: Reach Wireless Controller, Fable III Limited Edition Wireless Controller, Xbox 360 Wireless Headset, Xbox 360 Halo: Reach Wireless Headset, Xbox 360 Wireless Speed Wheel, Xbox 360 Wireless Microphone, and Xbox 360 ChatPad.

Ground Rule 12 Filing at 4. Although Motorola refers to two specific consoles (*i.e.*, "the Xbox 360 4 GB Console and the Xbox 360 250 GB Console "), Motorola's use of the phrase "including but not limited to" indicates that those two consoles may be examples of accused consoles. Motorola uses similar language with reference to examples of "all wireless accessories." In fact, Motorola has used similar "including but not limited" phrasing with respect to its accusations under each of the asserted patents. *See Id.* at 4-8. Whether Motorola has shown infringement by any specific version or configuration of accused consoles or accessories is addressed in connection with the infringement issue.

United States and/or sold after importation into the United States on or after December 17, 2010. The parties dispute whether Xbox consoles and wireless adapters using WiFi chips made by Atheros have been properly accused in this investigation. *Id.* at 7 & n.2. That issue is decided below in connection with the infringement issue.

With respect to the '712 patent, Motorola asserts claims 6, 8 and 17, and accuses all versions and configurations of the Microsoft Xbox 360 console imported into the United States and/or sold after importation into the United States on or after December 17, 2010. The parties dispute whether Xbox consoles and wireless adapters using WiFi chips made by Atheros have been properly accused in this investigation. *Id.* at 8 & n.3. That issue is decided below in connection with the infringement issue.

D. Technological Background

An Xbox 360 console typically uses a customer's television to display games, videos or other entertainment; uses a customer's home router to reach the Internet; and may be controlled by a user through wired or wireless controllers or other accessories. Tutorial Tr. 96-97, 195-198. The patents asserted by Motorola in this investigation relate to several aspects of video technology and wireless communications.

The '094 and '596 patents relate to certain video coding techniques used in a video coding standard called H.264. The H.264 standard was published in 2003, is also known as MPEG-4 Part 10, and also as MPEG advanced video coding or AVC. MPEG is an acronym for the Motion Picture Experts Group. That group joined with another group called the Video Coding Experts Group (or VCEG) to form the Joint Video Team (or JVT). The JVT developed H.264 video standard. Tutorial Tr. 8-9.

One goal of the H.264 (or MPEG-4 Part 10) standard was to enhance video compression efficiency over the previous standard called MPEG-2. Indeed, the H.264 standard allows one to achieve the same image quality while using fewer bits of information. Tutorial Tr. 9. This is done through a technique of encoding video data to eliminate temporal and spatial redundancies, thereby enabling one to store and transmit the data using a smaller bandwidth. The technique allows one to decompress the encoded data in order to decompress the video and to reconstruct an image in a way that is most faithful to the original image. The latter step is accomplished by generating approximated data that can be substituted for the nonessential data removed during the encoding process. Tutorial Tr. 9-11.

Video images are captured and displayed in lines. Video is available in two forms: progressive and interlaced. In progressive video, an image is captured or displayed line-by-line, in order, one after the other. In interlaced video, the odd lines are captured first; then, only a fraction of a second later, the even lines are captured. Thus, in encoding or decoding interlaced video, one must account for the short lapse of time in processing the odd and even lines that make up a video image. Tutorial Tr. 32-37, 50-57.

The '571 and '712 patents both involve wireless communications and the encryption of wireless communications. Encryption is used to prevent unauthorized reception of communications. Tutorial Tr. 164-165. The parties have referred to the '571 and '712 patents as the 802.11 patents. Tutorial Tr. 108, 140, 152.

The 802.11 standard is an international standard published by the IEEE (Institute of Electrical and Electronics Engineers), and concerns communications with a router.

The standard is used to implement wireless networks, including WiFi networks. The 802.11 standard provides options for network encryption. Tutorial Tr. 118, 152-156, 165.

Work began on the 802.11 standard many years ago, and has been subject to revision. The printed standard is now lengthy with over one thousand pages, with many optional portions, and reflects the contributions of many organizations. Tutorial Tr. 152.

The '896 patent involves technology used to be sure that devices make only authorized wireless connections. Tutorial Tr. 175, 183, 192-193. This area of technology generally involves making sure that devices connect to other devices that the user has selected or that meet a specific need. For example, a cell phone or a PDA may need to connect to a specific printer. This area of technology also involves making sure that communications are not received by similar devices used by a neighbor (such as making sure that your MP3 player does not play music in your neighbor's car). Tutorial Tr. 168-176, 192.

II. Jurisdiction

All parties have appeared and presented evidence and arguments on the merits in this investigation. No party has contested the Commission's jurisdiction over it. *See, e.g.*, Ground Rule 12 Filing. Accordingly, it is found that the Commission has personal jurisdiction over all parties in this investigation.

No party has contested the Commission's *in rem* jurisdiction over the accused products. *See, e.g.*, *Id.* Indeed, as indicated below, the importation requirement has been satisfied with respect to the accused products. Accordingly, it is found that the Commission has *in rem* jurisdiction over the accused products.

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No party has contested the Commission's jurisdiction over the subject matter of this investigation. *See, e.g., Id.* Indeed, as indicated in the Commission's notice of investigation, discussed above, this investigation involves the importation of products alleged to infringe United States patents in a manner that violates section 337 of the Tariff Act, as amended. Based on those facts alone, it should be found that the Commission has subject matter jurisdiction over this investigation.

Additionally, it is noted that early in Microsoft's initial post-hearing, respondent states: "Microsoft does not contest the Commission's jurisdiction, except to the extent set forth below concerning MMI's assertion of patents for which it has committed to provide licenses on RAND terms and conditions." Resp. Br. at 3 (Jurisdiction). Yet, Microsoft does not further address such a jurisdictional issue in its briefing. Indeed, nowhere in Microsoft's initial post-hearing brief (or reply brief) does respondent show that a failure of Motorola to fulfill licensing commitments, or otherwise to prevail in its infringement case, would deprive the Commission of subject matter jurisdiction, or any other form of jurisdiction, necessary to conclude this investigation.[5]

[5] *See Amgen v. Int'l Trade Comm'n*, 902 F.2d 1532 (Fed. Cir. 1999) ("As is very common in situations where a tribunal's subject matter jurisdiction is based on the same statute which gives rise to the federal right, the jurisdictional requirements of section 1337 mesh with the factual requirements necessary to prevail on the merits. In such a situation, the Supreme Court has held that the tribunal should assume jurisdiction and treat (and dismiss on, if necessary) the merits of the case." *Id.* at 1536 (footnote omitted) (citing *Bell v. Hood,* 327 U.S. 678, 682 (1946); *Jackson Transit Authority v. Local Division 1285, Amalgamated Transit Union, AFL-CIO-CLC*, 457 U.S. 15, 21 (1982))).

Accordingly, it is found that along with personal jurisdiction over the parties and *in rem* jurisdiction over the accused products, the Commission also has subject matter jurisdiction over this investigation.

III. Importation

Review of Microsoft's initial post-hearing and reply briefs, as well as the Ground Rule 12 Filing, shows that respondent has not contested the issue of importation.

In addition, the parties have stipulated that, for the purposes of this investigation, the importation requirement of section 337 (19 U.S.C. § 1337(a)(1)(B)) has been satisfied with respect to the 250 GB Xbox 360 S and the 4 GB Xbox 360 S. CX-628C.

Consequently, it is found that the importation requirement is satisfied with respect to all accused products.

IV. General Principles of Patent Law

A. Claim Construction

Claim construction begins with the plain language of the claim.[6] Claims should be given their ordinary and customary meaning as understood by a person of ordinary skill in the art, viewing the claim terms in the context of the entire patent. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005), *cert. denied*, 546 U.S. 1170 (2006).[7]

[6] Only those claim terms that are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *Vanderlande Indus. Nederland BV v. Int'l Trade Comm.*, 366 F.3d 1311, 1323 (Fed. Cir. 2004); *Vivid Tech., Inc. v. American Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

[7] Factors that may be considered when determining the level of ordinary skill in the art include: "(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are

In some instances, claim terms do not have particular meaning in a field of art, and claim construction involves little more than the application of the widely accepted meaning of commonly understood words. *Phillips*, 415 F.3d at 1314. "In such circumstances, general purpose dictionaries may be helpful." *Id.*

In many cases, claim terms have a specialized meaning and it is necessary to determine what a person of skill in the art would have understood the disputed claim language to mean. "Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks to 'those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean.'" *Id.* (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)). The public sources identified by in *Phillips* include "the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art." *Id.*

In cases in which the meaning of a claim term is uncertain, the specification usually is the best guide to the meaning of the term. *Id.* at 1315. As a general rule, the particular examples or embodiments discussed in the specification are not to be read into the claims as limitations. *Markman*, 52 F.3d at 979. However, the specification is always highly relevant to the claim construction analysis, and is usually dispositive. *Id.* Moreover, "[t]he construction that stays true to the claim language and most naturally

made; (5) sophistication of the technology; and (6) educational level of active workers in the field." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984).

aligns with the patent's description of the invention will be, in the end, the correct construction." *Id.* at 1316.

Claims are not necessarily, and are not usually, limited in scope to the preferred embodiment. *RF Delaware, Inc. v. Pacific Keystone Techs., Inc.*, 326 F.3d 1255, 1263 (Fed. Cir. 2003); *Decisioning.com, Inc. v. Federated Dep't Stores, Inc.*, 527 F.3d 1300, 1314 (Fed. Cir. 2008) ("[The] description of a preferred embodiment, in the absence of a clear intention to limit claim scope, is an insufficient basis on which to narrow the claims."). Nevertheless, claim constructions that exclude the preferred embodiment are "rarely, if ever, correct and require highly persuasive evidentiary support." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996). Such a conclusion can be mandated in rare instances by clear intrinsic evidence, such as unambiguous claim language or a clear disclaimer by the patentees during patent prosecution. *Elekta Instrument v. O.U.R. Sci. Int'l*, 214 F.3d 1302, 1308 (Fed. Cir. 2000); *Rheox, Inc. v. Entact, Inc.*, 276 F.3d 1319 (Fed. Cir. 2002).

If the intrinsic evidence does not establish the meaning of a claim, then extrinsic evidence may be considered. Extrinsic evidence consists of all evidence external to the patent and the prosecution history, and includes inventor testimony, expert testimony, and learned treatises. *Phillips*, 415 F.3d at 1317. Inventor testimony can be useful to shed light on the relevant art. In evaluating expert testimony, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent. *Id.* at 1318. Extrinsic evidence may be considered

if a court deems it helpful in determining the true meaning of language used in the patent claims. *Id.*

This investigation involves means-plus-function claim limitations. When a claim uses the term "means" to describe a limitation, a presumption arises that the inventor used the term to invoke the means-plus-function format authorized by 35 U.S.C. § 112, ¶ 6.[8] *Altiris, Inc. v. Symantec Corp.*, 318 F.3d 1363, 1375 (Fed. Cir. 2003). "This presumption can be rebutted when the claim, in addition to the functional language, recites structure sufficient to perform the claimed function in its entirety." *Id.*

Once a court concludes that a claim limitation is a means-plus-function limitation, two steps of claim construction remain: (1) the court must first identify the function of the limitation; and (2) the court must then look to the specification and identify the corresponding structure for that function. *Biomedino LLC v. Waters Technologies Corp.*, 490 F.3d 946, 950 (Fed. Cir. 2007). If there is no structure in the specification corresponding to the means-plus-function limitation, the claim will be found invalid as indefinite. *Id.*

While the specification must contain structure linked to claimed means, "[a]ll one needs to do in order to obtain the benefit of [§ 112, ¶ 6] is to recite some structure corresponding to the means in the specification, as the statute states, so that one can readily ascertain what the claim means and comply with the particularity requirement of

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[8] The relevant portion of section 112 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6.

[§ 112,] ¶ 2." *Id.* (citing *Atmel Corp. v. Info. Storage Devices, Inc.*, 198 F.3d 1374, 1382 (Fed. Cir. 1999)). Additionally, interpretation of what is disclosed in the specification must be made in light of the knowledge of one skilled in the art. *Id.* at 1380.

Thus, under section 112, the corresponding structure of the limitation "must be disclosed in the written description in such a manner that one skilled in the art will know and understand what structure corresponds to the means limitation. Otherwise, one does not know what the claim means." *Id.* at 1382. Yet, "the testimony of one of ordinary skill in the art cannot supplant the total absence of structure from the specification." *Id.* (quoting *Default Proof Credit Card Sys., Inc. v. Home Depot U.S.A., Inc.*, 412 F.3d 1291, 1302 (Fed. Cir. 2005)).

"A means-plus-function claim encompasses all structure in the specification corresponding to that element and equivalent structures." The statute does not, however, permit limitation of a means-plus-function claim by adopting a function different from that explicitly recited in the claim. Nor does the statute permit incorporation of structure from the written description beyond that necessary to perform the claimed function. *Micro Chem. Inc. v. Great Plains Chem. Co., Inc.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999).

B. Infringement

1. Direct Infringement

Under 35 U.S.C. §271(a), direct infringement consists of making, using, offering to sell, or selling a patented invention without consent of the patent owner. The complainant in a section 337 investigation bears the burden of proving infringement of the asserted patent claims by a "preponderance of the evidence." *Certain Flooring Products*, Inv. No. 337-TA-443, Comm'n Notice of Final Determination of No Violation

of Section 337, 2002 WL 448690 at *59, (Mar. 22, 2002); *Enercon GmbH v. Int'l Trade Comm'n*, 151 F.3d 1376 (Fed. Cir. 1998).

Literal infringement of a claim occurs when every limitation recited in the claim appears in the accused device, i.e., when the properly construed claim reads on the accused device exactly.[9] *Amhil Enters., Ltd. v. Wawa, Inc.*, 81 F.3d 1554, 1562 (Fed. Cir. 1996); *Southwall Tech. v. Cardinal IG Co.*, 54 F.3d 1570, 1575 (Fed Cir. 1995).

If the accused product does not literally infringe the patent claim, infringement might be found under the doctrine of equivalents. "Under this doctrine, a product or process that does not literally infringe upon the express terms of a patent claim may nonetheless be found to infringe if there is 'equivalence' between the elements of the accused product or process and the claimed elements of the patented invention." *Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co.*, 520 U.S. 17, 21 (1997) (citing *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 609 (1950)). "The determination of equivalence should be applied as an objective inquiry on an element-by-element basis."[10] *Id.* at 40.

"An element in the accused product is equivalent to a claim limitation if the differences between the two are insubstantial. The analysis focuses on whether the element in the accused device 'performs substantially the same function in substantially

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[9] Each patent claim element or limitation is considered material and essential. *London v. Carson Pirie Scott & Co.*, 946 F.2d 1534, 1538 (Fed. Cir. 1991). If an accused device lacks a limitation of an independent claim, the device cannot infringe a dependent claim. *See Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1552 n.9 (Fed. Cir. 1989).

[10] "Infringement, whether literal or under the doctrine of equivalents, is a question of fact." *Absolute Software, Inc. v. Stealth Signal, Inc.*, 659 F.3d 1121, 1130 (Fed. Cir. 2011).

the same way to obtain the same result' as the claim limitation." *AquaTex Indus. v. Techniche Solutions*, 419 F.3d 1374, 1382 (Fed. Cir. 2005) (quoting *Graver Tank*, 339 U.S. at 608); *accord Absolute Software*, 659 F.3d at 1139-40.[11]

Prosecution history estoppel can prevent a patentee from relying on the doctrine of equivalents when the patentee relinquishes subject matter during the prosecution of the patent, either by amendment or argument. *AquaTex*, 419 F.3d at 1382. In particular, "[t]he doctrine of prosecution history estoppel limits the doctrine of equivalents when an applicant makes a narrowing amendment for purposes of patentability, or clearly and unmistakably surrenders subject matter by arguments made to an examiner." *Id.* (quoting *Salazar v. Procter & Gamble Co.*, 414 F.3d 1342, 1344 (Fed. Cir. 2005)).

2. Indirect Infringement

a. Induced Infringement

Section 271(b) of the Patent Act provides: "Whoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b).

"To prevail on a claim of induced infringement, in addition to inducement by the defendant, the patentee must also show that the asserted patent was directly infringed." *Epcon Gas Sys. v. Bauer Compressors, Inc.*, 279 F.3d 1022, 1033 (Fed. Cir. 2002). Further, "[s]ection 271(b) covers active inducement of infringement, which typically includes acts that intentionally cause, urge, encourage, or aid another to directly infringe

[11] "The known interchangeability of substitutes for an element of a patent is one of the express objective factors noted by *Graver Tank* as bearing upon whether the accused device is substantially the same as the patented invention. Independent experimentation by the alleged infringer would not always reflect upon the objective question whether a person skilled in the art would have known of the interchangeability between two elements, but in many cases it would likely be probative of such knowledge." *Warner-Jenkinson*, 520 U.S. at 36.

a patent." *Arris Group v. British Telecomm. PLC*, 639 F.3d 1368, 1379 n.13 (Fed. Cir. 2011). The Supreme Court recently held that "induced infringement under § 271(b) requires knowledge that the induced acts constitute patent infringement ." *Global-Tech Appliances, Inc. v. SEB S.A.*, -- U.S. --, 131 S.Ct. 2060, 2068 (May 31, 2011). The Court further held: "[g]iven the long history of willful blindness[[12]] and its wide acceptance in the Federal Judiciary, we can see no reason why the doctrine should not apply in civil lawsuits for induced patent infringement under 35 U.S.C. § 271(b)." 131 S.Ct. at 2060 (footnote omitted).

b. Contributory Infringement

Section 271(c) of the Patent Act provides: "Whoever offers to sell or sells within the United States or imports into the United States a component of a patented machine, manufacture, combination or composition, or a material or apparatus for use in practicing a patented process, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer. 35 U.S.C. § 271(c).

Section 271(c) "covers both contributory infringement of system claims and method claims."[13] *Arris*, 639 F.3d at 1376 (footnotes omitted). To hold a component

[12] "While the Courts of Appeals articulate the doctrine of willful blindness in slightly different ways, all appear to agree on two basic requirements: (1) the defendant must subjectively believe that there is a high probability that a fact exists and (2) the defendant must take deliberate actions to avoid learning of that fact. We think these requirements give willful blindness an appropriately limited scope that surpasses recklessness and negligence." *Global-Tech*, 131 S.Ct. 2070-71.

[13] "Claims which recite a 'system,' 'apparatus,' 'combination,' or the like are all analytically similar in the sense that their claim limitations include elements rather than

supplier liable for contributory infringement, a patent holder must show, *inter alia*, that (a) the supplier's product was used to commit acts of direct infringement; (b) the product's use constituted a material part of the invention; (c) the supplier knew its product was especially made or especially adapted for use in an infringement" of the patent; and (d) the product is not a staple article or commodity of commerce suitable for substantial noninfringing use. *Id.*

C. Validity

One cannot be held liable for practicing an invalid patent claim. *See Pandrol USA, LP v. AirBoss Railway Prods., Inc.*, 320 F.3d 1354, 1365 (Fed. Cir. 2003). Nevertheless, each claim of a patent is presumed to be valid, even if it depends from a claim found to be invalid. 35 U.S.C. § 282; *DMI Inc. v. Deere & Co.*, 802 F.2d 421 (Fed. Cir. 1986). A respondent that has raised patent invalidity as an affirmative defense must overcome the presumption by "clear and convincing" evidence of invalidity. *Checkpoint Systems, Inc. v. United States Int'l Trade Comm'n*, 54 F.3d 756, 761 (Fed. Cir. 1995).

In this investigation, respondent raises affirmative defenses based on the following alleged ground of patent claim invalidity: anticipation, obviousness, indefiniteness, and lack of a written description. *See* Ground Rule 12 Filing at 5-9.

1. Anticipation

Anticipation under 35 U.S.C. § 102 is a question of fact. *z4 Techs., Inc. v. Microsoft Corp.*, 507 F.3d 1340, 1347 (Fed. Cir. 2007). Section 102 provides that, depending on the circumstances, a claimed invention may be anticipated by variety of

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method steps. All such claims can be contributorily infringed by a component supplier." *Arris*, 639 F.3d at 1376 n.8.

prior art, including publications, earlier-sold products, and patents. *See* 35 U.S.C. § 102 (*e.g.*, section 102(b) provides that one is not entitled to a patent if the claimed invention "was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States").

The general law of anticipation may be summarized, as follows:

> A reference is anticipatory under § 102(b) when it satisfies particular requirements. First, the reference must disclose each and every element of the claimed invention, whether it does so explicitly or inherently. *Eli Lilly & Co. v. Zenith Goldline Pharms., Inc.*, 471 F.3d 1369, 1375 (Fed.Cir.2006). While those elements must be "arranged or combined in the same way as in the claim," *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed.Cir.2008), the reference need not satisfy an *ipsissimis verbis* test, *In re Bond*, 910 F.2d 831, 832-33 (Fed.Cir.1990). Second, the reference must "enable one of ordinary skill in the art to make the invention without undue experimentation." *Impax Labs., Inc. v. Aventis Pharms. Inc.*, 545 F.3d 1312, 1314 (Fed.Cir.2008); *see In re LeGrice*, 49 C.C.P.A. 1124, 301 F.2d 929, 940-44 (1962). As long as the reference discloses all of the claim limitations and enables the "subject matter that falls within the scope of the claims at issue," the reference anticipates -- no "actual creation or reduction to practice" is required. *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1380-81 (Fed.Cir.2003); *see In re Donohue*, 766 F.2d 531, 533 (Fed.Cir.1985). This is so despite the fact that the description provided in the anticipating reference might not otherwise entitle its author to a patent. *See Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1562 (Fed.Cir.1991) (discussing the "distinction between a written description adequate to support a claim under § 112 and a written description sufficient to anticipate its subject matter under § 102(b)").

In re Gleave, 560 F.3d 1331, 1334 (Fed. Cir. 2009).

2. Obviousness

Under 35 U.S.C. § 103, a patent claim is invalid "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having

ordinary skill in the art."[14] While the ultimate determination of whether an invention would have been obvious is a legal conclusion, it is based on "underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness." *Eli Lilly and Co. v. Teva Pharmaceuticals USA, Inc.*, 619 F.3d 1329 (Fed. Cir. 2010).

The objective evidence, also known as "secondary considerations," include commercial success, long felt need, and failure of others . *Graham v. John Deere Co.*, 383 U.S. 1, 13-17 (1966); *Dystar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1361 (Fed. Cir. 2006). "[E]vidence arising out of the so-called 'secondary considerations' must always when present be considered en route to a determination of obviousness." *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983). Secondary considerations, such as commercial success, will not always dislodge a determination of obviousness based on analysis of the prior art. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 426 (2007) (commercial success did not alter conclusion of obviousness).

"One of the ways in which a patent's subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims." *KSR*, 550 U.S. at 419-20. "[A]ny need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.*

[14] The standard for determining whether a patent or publication is prior art under section 103 is the same as under 35 U.S.C. § 102, which is a legal question. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568 (Fed. Cir. 1987).

Specific teachings, suggestions, or motivations to combine prior art may provide helpful insights into the state of the art at the time of the alleged invention. *Id.* at 420. Nevertheless, "an obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents. The diversity of inventive pursuits and of modern technology counsels against limiting the analysis in this way." *Id.* "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *Id.* A "person of ordinary skill is also a person of ordinary creativity." *Id.* at 421.

Nevertheless, "the burden falls on the patent challenger to show by clear and convincing evidence that a person of ordinary skill in the art would have had reason to attempt to make the composition or device, or carry out the claimed process, and would have had a reasonable expectation of success in doing so." *PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1360 (Fed. Cir. 2007); *see KSR*, 550 U.S. at 416 (a combination of elements must do more than yield a predictable result; combining elements that work together in an unexpected and fruitful manner would not have been obvious).[15]

3. Indefiniteness

The definiteness requirement of 35 U.S.C. § 112 ensures that the patent claims particularly point out and distinctly claim the subject matter that the patentee regards to

[15] Further, "when the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 52 (1966)).

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be the invention. *See* 35 U.S.C. § 112, ¶ 2; *Metabolite Labs., Inc. v. Laboratory Corp. of America Holdings*, 370 F.3d 1354, 1366 (Fed. Cir. 2004). If a claim's legal scope is not clear enough so that a person of ordinary skill in the art could determine whether or not a particular product infringes, the claim is indefinite, and is, therefore, invalid. *Geneva Pharm., Inc. v. GlaxoSmithKline PLC*, 349 F.3d 1373, 1384 (Fed. Cir. 2003).[16]

Thus, it has been found that:

> When a proposed construction requires that an artisan make a separate infringement determination for every set of circumstances in which the composition may be used, and when such determinations are likely to result in differing outcomes (sometimes infringing and sometimes not), that construction is likely to be indefinite.

Halliburton Energy Servs. v. M-I LLC, 514 F.3d 1244, 1255 (Fed. Cir. 2008).

4. Lack of a Written Description

The issue of whether a patent is invalid for failure to meet the written description requirement of 35 U.S.C. § 112, ¶ 1 is a question of fact. *Bard Peripheral Vascular, Inc. v. W.L. Gore & Associates, Inc.*, 670 F.3d 1171, 1188 (Fed. Cir. 2012). A patent's written description must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed. The test for sufficiency of written description is "whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Id.* (quoting *Ariad Pharm., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc)).

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[16] Indefiniteness is a question of law. *IGT v. Bally Gaming In'l, Inc.*, 659 F.3d 1109 (Fed. Cir. 2011).

D. Domestic Industry

A violation of section 337(a)(1)(B), (C), (D) or (E) can be found "only if an industry in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned, exists or is in the process of being established." 19 U.S.C. § 1337(a)(2). Section 337(a) further provides:

> (3) For purposes of paragraph (2), an industry in the United States shall be considered to exist if there is in the United States, with respect to the articles protected by the patent, copyright, trademark, mask work, or design concerned—
>
> (A) significant investment in plant and equipment;
>
> (B) significant employment of labor or capital; or
>
> (C) substantial investment in its exploitation, including engineering, research and development.

19 U.S.C. § 1337(a)(3).

These statutory requirements consist of an economic prong (which requires certain activities) and a technical prong (which requires that these activities relate to the intellectual property being protected). *Certain Stringed Musical Instruments and Components Thereof*, Comm'n Op. at 8 (May 16, 2008) ("*Stringed Musical Instruments*").

The Commission practice is usually to assess the facts relating to the economic prong at the time that the complaint was filed. *See Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, Inv. No. 337-TA-560, Comm'n Op. at 39 n.17 (Apr. 14, 2010) ("We note that only activities that occurred before the filing of a complaint with the Commission are relevant to whether a domestic industry exists or is in the process of being established under sections 337(a)(2)-(3).") (citing

Bally/Midway Mfg. Co. v. U.S. Int'l Trade Comm'n, 714 F.2d 1117, 1121 (Fed. Cir. 1983)). In some cases, however, the Commission will consider later developments in the alleged industry, such as "when a significant and unusual development occurred after the complaint has been filed." *See Certain Video Game Systems and Controllers*, Inv. No. 337-TA-743, Comm'n Op., at 5-6 (Jan. 20, 2012) ("[I]n appropriate situations based on the specific facts and circumstances of an investigation, the Commission may consider activities and investments beyond the filing of the complaint.").

The burden is on the complainant to show by a preponderance of the evidence that the domestic industry requirement is satisfied. *Certain Multimedia Display and Navigation Devices and Systems, Components Thereof, and Products Containing Same*, Inv. No. 337-TA-694, Comm'n Op. at 3 (July 22, 2011) ("*Navigation Devices*").

"With respect to section 337(a)(3)(A) and (B), the technical prong is the requirement that the investments in plant or equipment and employment in labor or capital are actually related to 'articles protected by' the intellectual property right which forms the basis of the complaint." *Id.* "The test for satisfying the 'technical prong' of the industry requirement is essentially same as that for infringement, i.e., a comparison of domestic products to the asserted claims." *Alloc, Inc. v. In't Trade Comm'n*, 342 F.2d 1361, 1375 (Fed. Cir. 2003). Consequently, the sections of this Initial Determination that discuss the claim construction and technical infringement issues relative to each asserted patent (*i.e.*, sections V through IX) also contain analyses of products that complainant relies upon to satisfy the technical prong of section 337(a)(3)(A) and (B).

"With respect to section 337(a)(3)(C), the technical prong is the requirement that the activities of engineering, research and development, and licensing are actually related to the asserted intellectual property right." *Id.*

With respect to the economic prong, and whether or not section 337(a)(3)(A) or (B) is satisfied, the Commission has held that "whether a complainant has established that its investment and/or employment activities are significant with respect to the articles protected by the intellectual property right concerned is not evaluated according to any rigid mathematical formula." *Certain Printing and Imaging Devices and Components Thereof, Inv.* No. 337-TA-690, Comm'n Op. at 27 (Feb. 17, 2011) ("*Printing and Imaging Devices*") (citing *Certain Male Prophylactic Devices*, Inv. No. 337-TA-546, Comm'n Op. at 39 (Aug. 1, 2007)). Rather, the Commission examines "the facts in each investigation, the article of commerce, and the realities of the marketplace. *Id.* The determination takes into account the nature of the investment and/or employment activities the industry in question, and the complainant's relative size. *Id.* (citing *Stringed Musical Instruments*, Comm. Op. at 26).[17]

With respect to section 337(a)(3)(C), whether an investment in domestic industry is "substantial" is a fact-dependent inquiry for which the complainant bears the burden of proof. *Stringed Musical Instruments*, Comm'n Op. at 8. There is no minimum monetary expenditure that a complainant must demonstrate to qualify as a domestic industry under the "substantial investment" requirement of this section. There is no need to define or

[17] A further discussion of "significant investment" under section 337(a)(3)(A)-(B) is contained in section XI, in connection with the specific arguments made by Motorola in this investigation.

quantify an industry in absolute mathematical terms. Rather, "the requirement for showing the existence of a domestic industry will depend on the industry in question, and the complainant's relative size." *Id.* at 14.[18]

V. U.S. Patent No. 6,069,896

U.S. Patent No. 6,069,896 ("the '896 patent") is titled, "Capability Addressable Network and Method Therefor." JX-5 ('896 patent). The '896 patent issued on May 30, 2000, and the named inventors are Ronald Borgstahl, Jeffrey Harris, Ernest Woodward, and David Leeper. *Id.* The '896 patent relates generally to "data communication networks," and more specifically relates to "a peer-to-peer network in which node addressing is dynamically configurable." *Id.* at col. 1, lns. 5-8 (Technical Field of the Invention).

Motorola asserts independent method claims 1 and 12. The asserted claims read as follows:

> **1**. In a capability addressable peer-to-peer data communication network, a method of establishing network connectivity comprising the steps of:
>
> initiating a setup connection between first and second peers of said network by transmitting an unsolicited message containing an identification of said first peer to said second peer;
>
> authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer:
>
> exchanging needs and capabilities between said first and second peers after establishing said setup connection; and

[18] A further discussion of "substantial investment" under section 337(a)(3)(C) is contained in section XI, in connection with the specific arguments made by Motorola in this investigation.

selectively processing an addressed service connection in response to said exchange of needs and capabilities.

12. A method of operating a capability addressable peer-to-peer data communication network comprising the steps of:

a) detecting, at a first one of a service-requesting peer and a service-providing peer, physical proximity of a second one of said service-requesting and service-providing peers;

b) determining whether a need for a service connection exists at one of said service-requesting and service-providing peers;

c) establishing, if said determining step identifies said need, a setup wireless connection between said service-requesting and service-providing peers;

d) communicating authorization information describing said service-requesting peer to said service-providing peer;

e) forming a wireless service connection between said service-requesting and service-providing peers when said service-requesting peer is authorized through an identification code;

f) communicating capability information describing said service-providing peer to said service-requesting peer;

g) forming said wireless service connection between said service-requesting and service-providing peers when said service-providing peer is determined to have a capability compatible with said need determined in step b); and

h) providing said capability using said service connection.

JX-5 at col. 10, lns. 27-42; col. 11, ln. 46 – col. 12, ln. 13.

A. Claim Construction[19]

[19] A person of ordinary skill in the art of the '896 patent as of the fall of 1996 was typically a person who had a bachelor's degree in electrical engineering or computer science and three years of experience in networking and consumer electronics, or an

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1. "peer-to-peer" / "peer" (Claims 1, 12)

Below is a chart showing the parties' proposed claim constructions.

Claim Term	Motorola's Construction	Microsoft's Construction
"peer-to-peer"	having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power	communication between peers
"peer"	a computer or microprocessor controlled electronic device in a peer-to-peer network	device having at least common portions of communications protocol and/or capability with another peer, that can establish a personal area network, and that can initiate a connection with other peers without servers being required to manage the connections

The claim term "peer-to-peer" appears in the preamble of independent claims 1 and 12. JX-5 at col. 10, lns. 27-42; col. 11, ln. 46 – col. 12, ln. 13.[20]

Motorola construes the term to mean "having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power." Compls. Br. at 17-18; RX-394 (Joint Identification of Claim Terms and Proposed Constructions) at 9. Microsoft construes the term to mean "communication between peers." Resp. Br. at 110-11.

advanced degree and one to two years of experience in the field. *See* CX-712C (Madisetti WS) at 9-10.

[20] The term also appears in non-asserted independent claim 10. JX-5.

As proposed by Motorola, the claim term "peer-to-peer" is construed to mean "having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power."

The '896 patent provides an express definition of the term "peer-to-peer":

> As used herein, the term "peer-to-peer" is defined to mean having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power.

JX-5 at col. 3, lns. 8-12 (emphasis added); Madisetti Tr. 264-66. When, as here, the patentee chooses to be his own lexicographer and provides an explicit definition, that definition governs. *See Sinorgchem Co. Shandong v. U.S. Int'l Trade Comm'n*, 511 F.3d 1132, 1138 (Fed. Cir. 2007); *Phillips.*, 415 F.3d at 1316 ("the specification may reveal a special definition given to a claim term [so] the inventor's lexicography governs."). Because the language used by the applicants ("as used herein" and "is defined to mean") "clearly, deliberately, and precisely" defines the term "without ambiguity," this definition governs. *Sinorgchem*, 511 F.3d at 1136, 1138.

The term "peer" appears in the first, second, and third steps of independent claim 1, and steps a) through g) of independent claim 12. JX-5 at col. 10, lns. 27-42; col. 11, ln. 46 – col. 12, ln. 13.[21]

Motorola construes the term to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network." Compls. Br. at 17-18. Microsoft construes the term to mean a "device having at least common portions of communications protocol

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[21] The term also appears in non-asserted claims. JX-5.

and/or capability with another peer, that can establish a personal area network, and that can initiate a connection with other peers without servers being required to manage the connections." Resp. Br. at 110-11.

As proposed by Motorola, the claim term "peer" is construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network."

The '896 patent explains that a "peer" can be "virtually any electronic device":

> While FIG. 1 shows only a few peers 20, virtually any computer or microprocessor controlled electronic device throughout the world may serve as a peer 20.

JX-5 at col. 3, lns. 3-5 (emphasis added). Such a broad definition of "peer" is further supported elsewhere in the specification. For example, the specification provides that "a wide variety of everyday, commonly encountered electronically controlled devices" can be peers. JX-5 at col. 5, lns. 23-25. Examples of peers in the '896 patent include "a personal digital assistant (PDA), television, radio, CD player, tape player, copier, facsimile machine, telephone, cellular telephone, cordless telephone, pager, watch, computer, point of sale (POS) terminal, automated teller, or other electronic device." JX-5 at col. 5, lns. 25-30. The '896 patent further explains that a peer can be an input/output device, such as "keyboards, pointing devices, optical scanners, microphones, and other well known input devices" and "printers, monitors, speakers, and other well known output devices." JX-5 at col. 5, lns. 42-50. *See also* Madisetti Tr. 186.

Microsoft's proposed construction omits the second half of the specification's express definition of "peer-to-peer," in which the specification explains that the term peer-to-peer "does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power." JX-5 at col. 3, lns. 9-12.

Indeed, although Microsoft's expert, Mr. McNair, agrees that the '896 patent provides an express definition of "peer-to-peer," RRX-68C (McNair RWS) at 11-13, he nevertheless referred to the second half of the express definition as "not really necessary to me or useful."[22] McNair Tr. 1110. But this approach is contrary to law. *Sinorgchem*, 511 F.3d at 1136-1139 (overturning construction where it left off part of definition explicitly provided in patentee's lexicography).

Microsoft proposes two unrelated requirements that are not part of the '896 patent's disclosure. First, Microsoft requires that a peer be a device "that can establish a personal area network." However, this is an optional characteristic: "Each peer or communication node 20 of communications network 22 may establish a personal area network." JX-5 at col. 3, lns. 12-14 (emphasis added); *see also* Madisetti Tr. 181-183; 187; 332-333; 336. Microsoft's expert, Mr. McNair, believes that this sentence limits the term "peer" in the claims. McNair Tr. 1110-1111. However, he concedes that "may establish" in the sentence in question is ambiguous and that it could mean "may or may not establish." McNair Tr. 1113. Although Mr. McNair goes on to claim that this ambiguity is resolved in the specification, the sentence he points to says, "In the preferred embodiments, each peer 20 can initiate a connection with other peers 20 ...." JX-5 at col. 5, lns. 35-37; McNair Tr. 1113. However, the words "initiate" and "establish" are used differently in the claims and the specification. Further, this sentence describes only a preferred embodiment.

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[22] In his rebuttal witness statement, Mr. McNair took this position a step further, asserting that "peers" must be "interchangeable" and "act in the same manner when presented with the same inputs." RRX-68C (McNair RWS) at 11. This position is in direct conflict with the specification's express disclosure, JX-5 at col. 3, lns. 9-12.

Second, Mr. McNair conflates the meanings of "establish" and "initiate." RRX-68C (McNair RWS) at 23. As Dr. Madisetti pointed out, establishing a network requires only the ability to participate in the formation of that network. Madisetti Tr. 188-189.

Microsoft's construction also requires a peer to be a device "that can initiate a connection with other peers without servers being required to manage the connections." This characteristic, however, is a feature of only preferred, not all, embodiments. JX-5 at FIG. 1; col. 2, lns. 38-42; col. 3, lns. 35-37; col. 10, lns. 20-25; Madisetti Tr. 332-333. The Federal Circuit has repeatedly instructed that limiting the claims to a preferred embodiment is improper. *Phillips*, 415 F.3d at 1323.

2. "capability addressable peer-to-peer data communication network"

Claim Term	Motorola Construction	Microsoft Construction
"capability addressable peer-to-peer data communication network"	a peer-to-peer data communications network where messages may be addressed in some manner related to capability	a peer-to-peer data communications network that allows connection without any prior setup or activation procedures

The claim term "capability addressable peer-to-peer data communication network"[23] appears in the preamble of independent claims 1 and 12. JX-5 at col. 10, lns. 27-42; col. 11, ln. 46 – col. 12, ln. 13.[24]

Motorola construes the term to mean "a peer-to-peer data communications network where messages may be addressed in some manner related to capability." Compls. Br. at 19-20. Microsoft construes the term to mean "a peer-to-peer data

[23] The parties' post-hearing briefs refer to "communication" as "communications."

[24] The term also appears in non-asserted independent claim 10. JX-5.

communications network that allows connection without any prior setup or activation procedures." Resp. Br. at 116-17.

As proposed by Motorola, the claim term "capability addressable peer-to-peer data communication network" is construed to mean "a peer-to-peer data communications network where messages may be addressed in some manner related to capability."

The parties' constructions both require "a peer-to-peer data communications network" but differ in their characterization of a "capability addressable" network. Consistent with the plain language of the claim (*i.e.*, "capability addressable"), Motorola's construction provides that the network is one in which "messages may be addressed in some manner related to capability." Both parties' experts agree with this construction. CX-712C (Madisetti WS) at 14-16; McNair Tr. 1094.

The '896 patent provides that "[r]ather than specifying a network unique address to initiate a connection, network 22 uses physical proximity along with a needs and capabilities evaluation (discussed below) to target a peer 20 with which a connection is desired." JX-5 at col. 4, lns. 18-22. Similarly, the Abstract of the '896 patent states that a "wireless, peer-to-peer, capability addressable network (22) is disclosed. The network (22) accommodates any number of peers (20). Network connections are formed based upon proximity between peers (20) and upon a needs and capabilities evaluation (82)."

In contrast, Microsoft's proposed construction requires that the network "allows connection without any prior setup or activation procedures." Microsoft's own expert describes that characteristic as "a phrase that was used in the specification to describe desirable characteristics of the capability addressable network." McNair Tr. 1092. Desirable features are not claim limitations. Whether connections can take place without

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"setup connection" / "setup wireless connection"	an initial connection over which two peers can negotiate an addressed service connection	an initial connection that permits two peers to exchange needs and capabilities to determine whether to create an "addressed service connection"

The claim term "setup connection" appears in the first, second, and third steps of independent claim 1. JX-5 at col. 10, lns. 27-42.[25] The term "setup wireless connection" appears in step c) of independent claim 12. JX-5 at col. 11, ln. 46 – col. 12, ln. 13.

Motorola construes the terms to mean "an initial connection over which two peers can negotiate an addressed service connection." Compls. Br. at 21. Microsoft construes the terms to mean "an initial connection that permits two peers to exchange needs and capabilities to determine whether to create an 'addressed service connection'." Resp. Br. at 122.

As proposed by Motorola, the claim term "setup wireless connection" is construed to mean "an initial connection over which two peers can negotiate an addressed service connection." Additionally, the term "setup wireless connection" is construed to mean "an initial wireless connection over which two peers can negotiate an addressed service connection."

The parties dispute whether a setup connection is a connection that allows peers to negotiate an addressed service connection (as Motorola proposes) or is somehow limited to a connection that permits two peers to exchange needs and capabilities to determine whether to create an addressed service connection (as Microsoft proposes).

The '896 patent discloses that a setup connection is used generally for the

[25] The term also appears in non-asserted claims. JX-5.

prior activation or setup procedures has nothing to do with whether something is "capability addressable." Prior activation and setup procedures relate to setting up the networks, whereas capability addressable relates to how messages will be addressed once a network has been set up.

Indeed, the inventors of the '896 patent recognized the importance of retaining some user control. Leeper Tr. 128-129. Microsoft's proposed construction contradicts how the patent describes network set-up. While the '896 patent does state that "[a] priori activation and setup procedures are not required in this network because no network specific equipment requires network addresses in order to make connections" (JX-5 at col. 10, lns. 4-7; *see also id.* at col. 2, lns. 2-6), this statement does not preclude use of "a priori activation and setup procedures." In fact, the '896 patent specifically contemplates that some prior setup procedures may take place: "Whether user intervention is required or not should depend upon the security.... For example, peers 20 involved in financial transactions can benefit upon user intervention to ensure security...." JX-5 at col. 8, lns. 46-55; *see also Id.* at col. 7, lns. 47-51. Similarly, in the "BACKGROUND OF THE INVENTION," the '896 patent repeatedly describes the prior art as requiring "excessive" a priori activation and setup procedures. JX-5 at col. 1, lns. 53-54; col. 2, lns. 2-8, 29-31. This is consistent with the statement quoted immediately above, which makes clear that some user intervention and a priori knowledge is within the scope of the invention.

3. "setup connection" / "setup wireless connection"

Claim Term	Motorola Construction	Microsoft Construction

negotiation of an addressed service connection. Such use may include the evaluation of needs or capabilities. JX-5 at col. 7, ln. 55 – col. 8, ln. 6. A setup connection may also be used, however, for other negotiations:

> If the negotiation process is not complete, a task 88 establishes or otherwise continues the setup connection in furtherance of the negotiation process by sending an addressed negotiation message (not shown) to the peer 20 whose peer ID 66 (see FIG. 7) was included in a just-received needs/capabilities message 64.

JX-5 at col. 8, lns. 23-30. Additional negotiations performed over the setup connection are further discussed in the following paragraph of the specification. JX-5 at col. 8, lns. 33-42.

Nonetheless, Microsoft requires the "setup connection" to permit peers to exchange needs and capabilities. However, only claim 1 requires an exchange of needs and capabilities. Claim 12 does not. Thus, Microsoft's construction improperly reads a step from claim 1 into claim 12. Also, Microsoft improperly requires that a setup connection be used to make a binary decision—*whether* to create an addressed service connection.

4. "addressed service connection" (Claim 1) and "wireless service connection" (Claim 12)

Claim Term	Motorola Constructions	Microsoft Constructions
"addressed service connection" (Claim 1)	a connection over which service(s) can be provided to addressed peer(s)	connection created between two peers over which one peer provides the capability to satisfy another peer's needs and where the peers are identified by address
"wireless service connection" (Claim 12)	a wireless connection over which services can be provided to peers	wireless connection created between two peers over which one peer provides the capability to satisfy another peer's needs

The claim term "addressed service connection" appears in the third step of independent claim 1. JX-5 at col. 10, lns. 27-42.[26]

Motorola construes the term to mean "a connection over which service(s) can be provided to addressed peer(s)." Compls. Br. at 22. Microsoft construes the term to mean "connection created between two peers over which one peer provides the capability to satisfy another peer's needs and where the peers are identified by address." Resp. Br. at 120-21.

As proposed by Motorola, the claim term "addressed service connection" is construed to mean "a connection over which service(s) can be provided to addressed peer(s)."

The term "wireless service connection" appears in steps e) and g) of independent claim 12. JX-5 at col. 11, ln. 46 – col. 12, ln. 13.

Motorola construes the term to mean "a wireless connection over which services can be provided to peers." Compls. Br. at 22. Microsoft construes the term to mean "wireless connection created between two peers over which one peer provides the capability to satisfy another peer's needs." Resp. Br. at 120-21.

The term "wireless service connection" is construed to mean "a wireless connection over which services can be provided to peers."

The '896 patent discloses that, after some preliminary steps, "a process service connection procedure 92 is performed. During procedure 92, a one-to-one, addressed connection is established between peers 20 to perform network services." JX-5 at col. 8,

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[26] The term also appears in non-asserted claims. JX-5.

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lns. 40-44. FIG. 10 of the '896 patent shows various services that can be provided over an addressed service connection. For example, the addressed connection can provide user input from a service-providing peer (*e.g.*, a PDA) to a service-receiving peer (*e.g.*, an appliance) to allow a user to program the appliance (*id.* at col. 9, lns. 5-14). *See also* JX-5 at col. 9, lns. 15-65 (additional examples).

Microsoft's constructions inject the unnecessary language "over which one peer provides the capability to satisfy another peer's needs" into these terms. Neither the express claim language nor the specification – including the portions cited by Microsoft in its brief – *requires* the inclusion of this language. *See, e.g.*, *Varco, L.P. v. Pason Sys. USA Corp.*, 436 F.3d 1368, 1373 (Fed. Cir. 2006).

5. "selectively processing an addressed service connection" (Claim 1)

Claim Term	Motorola Construction	Microsoft Construction
"selectively processing an addressed service connection" (Claim 1)	selectively using an addressed connection for the provision of one or more services	establishing an "addressed service connection" if the capability of one peer matches the need of the other peer

The claim term "selectively processing an addressed service connection" appears in the third step of independent claim 1. JX-5 at col. 10, lns. 27-42.

Motorola construes the term to mean "selectively using an addressed connection for the provision of one or more services." Compls. Br. at 23. Microsoft construes the term to mean "establishing an 'addressed service connection' if the capability of one peer matches the need of the other peer." Resp. Br. at 118.

As proposed by Motorola, the claim term "selectively processing an addressed service connection" is construed to mean "selectively using an addressed connection for

the provision of one or more services."

The dispute between the parties is whether "processing" means using a connection for the provision of services (as Motorola proposes), or is limited to just "establishing" a connection with no further processing once established (as Microsoft proposes). Motorola's construction is consistent with the express claim language and the teachings of the '896 patent.

As explained above, a service connection is used to provide various services from one peer to another. *See* JX-5 at col. 8, ln 63-col. 9, ln. 65. The '896 patent explains that "FIG. 10 shows a flow chart of process service connection procedure 92. Procedure 92 illustrates a collection of tasks which can be performed at a service-providing peer 20 in support of a service connection." JX-5 at col. 8, lns. 56-59 (emphases added). As explained in the patent, Figure 10 shows examples of the different types of services that can be provided (*i.e.*, processed) after the service connection is established. For example:

> [Process Service Connection] Procedure 92 performs a task 94 to provide a network relay, router, or gateway capability for a service-receiving peer 20 of network 22 through an established service connection. During task 94, a service-providing peer 20 relays data communications between the connected peer 20 and a remote device 34 (see FIG. 1). After task 94, program flow returns to process 56 (see FIG. 6). Task 94 may be used to extend the service connection to the Internet or other network.
>
> * * *
>
> [Process Service Connection] Procedure 92 performs a control appliance process 102 to support the controlling of appliances. Tasks 104, 106, and 108 of process 102 are performed to program an appliance peer 20 with personalization data 52 (see FIG. 2). During task 104, a service-providing peer 20 gets personalization data 52 from the connected, service-receiving peer 20 using the service

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> connection. Next, task 106 translates the network compatible personalization data 52 into a format suitable for the specific appliance to be programmed with personalization data 52.

JX-5 at col. 9, lns. 5-32 (emphases added). As it is clear from the specification, processing the service connection means using the connection to provide actual services, not just "establishing" a connection.[27] Motorola's construction is also consistent with Dr. Madisetti's testimony. Madisetti Tr. 350-354.

Microsoft ignores these teachings and limits "processing" to just establishing the connection.[28] Microsoft also ignores the fact that the applicants used the term "establishing" elsewhere in the claims but chose to use the term "processing" in this step, further showing that "processing" does not mean "establishing." *See* Madisetti Tr. 351-352; McNair Tr. 1068-70.[29] Microsoft's own expert admitted that he "understands [the]

[27] Mr. McNair admitted that the entirety of Figure 10 shows a flowchart of a "process service connection" procedure performed at a peer. McNair Tr. 1070. He also agreed that the figure shows functions including relaying information, collecting user information, and sending user information. McNair Tr. 1070-1071. While Mr. McNair resisted admitting that Figure 10 reflects a procedure (as opposed to a label) (*see, e.g.,* McNair Tr. 1070-1076), he ultimately admitted that Figure 10 appears to be a procedure. McNair Tr. 1077. Mr. McNair also admitted that in Figure 6, the box "process a service connection" is a procedure followed after negotiation is successful. McNair Tr. 1074. Thus, even according to Microsoft's own expert, a service connection must be more than a mere "establishing." Further, the patent specification states that the tasks identified in Figure 10 take place over an "established" service connection. *See* JX-5 at col. 8, ln. 63-col. 9, ln. 7 (tasks 92 and 94).

[28] While the patent does provide that "[d]uring procedure 92, a one-to-one, addressed connection is established between peers 20 to perform network services" (JX-5 at col. 8, lns. 42-44), Figure 10 and the related discussion in the '896 patent make it abundantly clear that "processing" is not just "establishing" the connection. It involves the actual provision of the various services that are set forth in Figure 10 as described in column 9 of the '896 patent.

[29] Mr. McNair agreed during his deposition that processing a service connection meant relaying information, collecting user information, and sending user information, despite

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logic" that if the applicants had meant "establishing" in this context they would have used the word "establishing" since it appears in the prior claim steps. McNair Tr. 1069.

6. "physical proximity" (Claim 12)

Claim Term	Motorola Construction	Microsoft Construction
"physical proximity" (Claim 12)	within range of a peer in a low power wireless network	within a predetermined distance from each other

The claim term "physical proximity" appears in step a) of independent claim 12. JX-5 at col. 11, ln. 46 – col. 12, ln. 13.

Motorola construes the term to mean "within range of a peer in a low power wireless network." Compls. Br. at 25. Microsoft construes the term to mean "within a predetermined distance from each other." Resp. Br. at 123.

As proposed by Motorola, the claim term "physical proximity" is construed to mean "within range of a peer in a low power wireless network."

Motorola's construction of "physical proximity" is consistent with the express teachings of the '896 patent. The '896 patent explains:

> FIG. 1 depicts a detection zone 28 surrounding each peer 20. In the preferred embodiments, wireless communication links 26 for the vast majority of peers 20 are operated at a <u>sufficiently low power so that a wireless communication range</u> for a given peer 20 is preferably less than 5 meters, although the range may be much greater, for the typical peer 20.
>
> * * *
>
> While a peer 20 may potentially connect through network 22 with a vast multitude of peers 20, <u>the use of low power</u>

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the fact that he was unwilling to agree to that position during the hearing. McNair Tr. 1070-1072.

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> wireless communication links 26 limits the number of potential connections at any given instant in time to those peers 20 which are physically proximate to one another. In other words, only when a first peer 20 resides in the detection zone 28 of a second peer 20 and that second peer 20 resides in the detection zone 28 of the first peer 20 can a connection through network 22 occur.

JX-5 at col. 3, lns. 58-64 and col. 4, lns. 8-16 (emphases added).

> Generally, task 58 allows a first peer 20 to determine whether a second peer 20 is physically proximate to the first peer 20. Task 58 causes transmit and receive section 38 (see FIG. 2) to monitor wireless communication link 26 (see FIG. 1) to determine whether a signal compatible with a protocol being used by network 22 (see FIG. 1) can be received. Due to the above-described low transmission power levels used by peers 20, when a signal is detected, the peer 20 sending the signal is located near the receiving peer 20.

JX-5 at col. 5, ln. 66-col. 6, ln 7 (emphases added). Thus, in the context of the '896 patent, "physically proximate" means within the range of a peer in a low-power wireless network. CX-712C (Madisetti WS) at 20-21; Madisetti Tr. 242.

Mr. McNair contends that to determine whether it is "physically proximate," a peer must measure in inches or meters how far it is from another peer.[30] He admitted, however, that no means of making such a measurement is disclosed in the '896 patent. McNair Tr. 1042-1043.[31] Moreover, there is nothing in the patent to suggest that "physically proximate" means anything other than "near," and certainly nothing to

[30] Mr. McNair originally testified that each peer must make such a measurement. RRX-68C (McNair RWS) at 39-40. Yet, at the hearing, Mr. McNair suggested only that one peer must measure. McNair Tr. 1036-1037.

[31] Mr. McNair's testimony about the construction of this term is suspect for other reasons as well. For instance, while testifying, Mr. McNair was concerned about the accuracy of a statement in the patent itself dealing with physical proximity. McNair Tr. 1041-1042.

suggest that detecting physical proximity requires peers to perform measurements of how far away they are from other peers. Indeed, the '896 patent explains peers might operate at a range of "preferably less than 5 meters" up to some distance "much greater." JX-5 at col. 3, lns. 62-63. Thus, physical proximity, as used in the patent, is not based on some peer-measured predetermined distance between peers, but rather on the peers being sufficiently near to one another for them to communicate effectively using low power communication.[32]

7. "authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer" (Claim 1)

Claim Term	Motorola Construction	Microsoft Construction
"authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer" (Claim 1)	permitting said second peer to establish said setup connection with said first peer as a result of said identification of said first peer	determining, using the identification of the first peer, if the second peer should establish the "setup connection" based on whether the first peer has permission to establish a setup connection with said second peer

The claim term "authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer" is the second step of independent claim 1. JX-5 at col. 10, lns. 27-42.

Motorola construes the term to mean "permitting said second peer to establish said setup connection with said first peer as a result of said identification of said first

[32] As Dr. Madisetti testified, "[o]ne of ordinary skill in the art would appreciate that the distance at which nodes can communicate cannot be predetermined but would be dependent on the conditions of the wireless channel, presence of noise, and other impairments, as well as the power applied at the transmitter." CX-712C (Madisetti WS) at 21.

peer." Compls. Br. at 26. Microsoft construes the term to mean "determining, using the identification of the first peer, if the second peer should establish the 'setup connection' based on whether the first peer has permission to establish a setup connection with said second peer." Resp. Br. at 124.

As proposed by Motorola, the claim term "authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer" is construed to mean "permitting said second peer to establish said setup connection with said first peer as a result of said identification of said first peer."

Motorola's construction is based on the plain language of the claim and the teachings of the '896 patent. *See* JX-5 at col. 6, lns. 41-52, col. 7, lns. 40-59.

Microsoft's construction lacks logic and clarity. For example, "authorizing" does not mean determining if the peer "should establish" a connection, as Microsoft proposes. Rather, authorizing means actually permitting the connection to take place. *See, e.g.*, JX-5 at col. 7, lns. 42-45. Nor does "authorizing said second peer" necessarily have anything to do with "whether the first peer has permission." While there may be circumstances in which authorizing said second peer may involve consideration of whether the first peer has permission, nothing in the '896 patent limits the claim to this scenario.

8. "authorization information" (Claim 12)

Claim Term	Motorola Construction	Microsoft Construction
"authorization information" (Claim 12)	information used for authorization	one or more code numbers or passwords that provide permission to use a resource

The claim term "authorization information" appears in step d) of independent claim 12. JX-5 at col. 11, ln. 46 – col. 12, ln. 13.

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Motorola construes the term to mean "information used for authorization." Compls. Br. at 27. Microsoft construes the term to mean "one or more code numbers or passwords that provide permission to use a resource." Resp. Br. at 125.

As proposed by Motorola, the claim term "authorization information" is construed to mean "information used for authorization."

Motorola's construction is based on the plain language of the claim. "Authorization information" is information used for authorization—nothing in the patent requires a more limited construction. Nor is there any support in the patent to limit "authorization information" to only passwords or code numbers, as Microsoft proposes.

Although the '896 patent discloses passwords, it does so in the context of "personalization data" (JX-5 at col. 4, lns. 64-66), not authorization information. The patent discloses that an "authorization key 68" includes "one or more data codes." *Id.* at col. 6, lns. 49-50. However, message 64 is "exemplary" (*Id.* at col. 6, lns. 41-43) and, accordingly, cannot limit the claims. *See Liebel–Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) ("Even when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction.'"). Therefore, there is nothing in the '896 patent that limits authorization information in the manner proposed by Microsoft.

9. "authorized through an identification code" (Claim 12)

Claim Term	Motorola Construction	Microsoft Construction

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"authorized through an identification code" (Claim 12)	permitted using an identification code	determining, using the identification code, whether the service-requesting peer has permission to establish a wireless service connection with the service-providing peer

The claim term "authorized through an identification code" appears in step e) of independent claim 12. JX-5 at col. 11, ln. 46 – col. 12, ln. 13.

Motorola construes the term to mean "permitted using an identification code." Compls. Br. at 28. Microsoft construes the term to mean "determining, using the identification code, whether the service-requesting peer has permission to establish a wireless service connection with the service-providing peer." Resp. Br. at 126.

As proposed by Motorola, the claim term "authorized through an identification code" is construed to mean "permitted using an identification code."

Motorola's construction is based on the plain language of the claim and the teachings of the '896 patent. In the '896 patent, "authorizing" means permitting. This is shown, for example, in steps 78 and 80 of Figure 6. Assuming there is authorization, further communication is permitted, including, for example, an exchange of needs and capabilities as shown in step 82. *See* JX-5 at col. 7, lns. 39-59.

Microsoft improperly injects unnecessary words into its construction and ignores the claim language. For example, the phrase "authorized through an identification code" does not include any claim term that would require the inclusion of the phrases "service-requesting peer," "service-providing peer" or "establish a wireless service connection." The inclusion of these terms elsewhere in the claim confirms that their inclusion in the construction of "authorized through an identification code" is superfluous and incorrect.

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10. "exchanging needs and capabilities between said first and second peers" (claim 1)

Claim Term	Motorola Construction	Microsoft Construction
"exchanging needs and capabilities between said first and second peers" (claim 1)	the first and second peers transmit to each other information about their respective needs (if any) and capabilities (if any)	both the first and second peers sending their needs to the other peer and receiving from the other peer that other peer's capabilities

The claim term "exchanging needs and capabilities between said first and second peers" appears in the third step of independent claim 1. JX-5 at col. 10, lns. 27-42.

Motorola construes the term to mean "the first and second peers transmit to each other information about their respective needs (if any) and capabilities (if any)." Compls. Br. at 28. Microsoft construes the term to mean "both the first and second peers sending their needs to the other peer and receiving from the other peer that other peer's capabilities." Resp. Br. at 126-27.

As proposed by Motorola, the claim term "exchanging needs and capabilities between said first and second peers" is construed to mean "the first and second peers transmit to each other information about their respective needs (if any) and capabilities (if any)."

The primary dispute between the parties is whether the first and second peers are each required to both (1) send a need to the other peer and (2) receive a capability from the other peer. Microsoft requires this; Motorola does not.

The '896 patent discloses that peers exchange information about needs and capabilities. This, however, does not mean that a peer must always have both a current need and an available capability to exchange. A peer may have just a current need or an

available capability. The '896 patent disclosure makes this explicitly clear:

> Referring back to FIG. 7, need/capability message 64 includes those codes from tables 74 and 76 (see FIGS. 8-9) that currently apply. While a peer 20 may have more than one need or capability at a given instant, nothing requires a peer 20 to have multiple needs or capabilities. Moreover, nothing requires a peer 20 to have both a network need and a network capability. Message 64 serves as a need message if a peer need is specified regardless of whether a peer capability is specified and as a capability message if a peer capability is specified regardless of whether a peer need is specified.

JX-5 at col. 7, lns. 26-36 (emphases added).[33] Consistent with Motorola's construction, these passages confirm that when needs and capabilities are exchanged (task 82 in FIG. 6), the peers will transmit to each other information about only their respective current needs (if any) and available capabilities (if any)—not necessarily both. Madisetti Tr. 175-176.

Because Microsoft's construction arguably requires that each peer communicate ***both*** a need and a capability, it is wrong and must be rejected. Microsoft points to FIG. 7 of the patent to support its position. However, even Microsoft's own expert admits that this figure showing a possible data format for need/capability messages is merely exemplary. McNair Tr. 1144-1145.

[33] Furthermore, the '896 patent further explains that, "If authorization is accepted, a task 82 evaluates peer needs with peer capabilities. In other words, task 82 causes the message-receiving peer to compare its available capabilities (if any) to any needs listed in a received unsolicited need/capability message 64 (see FIG. 7) and to compare its available needs (if any) to any capabilities listed in the message 64. After task 82, a query task 84 acts upon the result of the evaluation of task 82." JX-5 at col. 7, lns. 60-67 (emphases added).

B. Infringement Analysis of the '896 Patent

1. Accused Products

Motorola argues that at least the following products are accused products: all versions and configurations of the Microsoft Xbox 360 console imported into the United States and/or sold after importation into the United States on or after December 17, 2010, including but not limited to the Xbox 360 4 GB Console and the Xbox 360 250 GB Console; as well as all wireless accessories, including but not limited to the Xbox 360 Wireless Controller, Xbox 360 Wireless Controller Play and Charge Kit, Wireless Controller with Transforming D-Pad and Play and Charge Kit, Xbox 360 Halo: Reach Wireless Controller, Fable III Limited Edition Wireless Controller, Xbox 360 Wireless Headset, Xbox 360 Halo: Reach Wireless Headset, Xbox 360 Wireless Speed Wheel, Xbox 360 Wireless Microphone, and Xbox 360 ChatPad. Compls. Br. at 29-30 citing CX-712C (Madisetti WS) at 3.

Microsoft does not dispute this.

2. Direct Infringement

For the reasons set forth below, Motorola has shown that Microsoft's accused products directly infringe all asserted claims of the '896 patent.

Claim 1

The preamble of independent method claim 1 recites:

> **In a capability addressable peer-to-peer data communication network, a method of establishing network connectivity comprising the steps of:**

Motorola has established that this claim limitation is satisfied.

The method of claim 1 is performed whenever the Xbox console and an accessory device go through the discovery process. CX-712C (Madisetti WS) at 67-68. Portions of the method are further satisfied during subsequent negotiations between the Xbox console and an accessory device, relating to needs for additional or modified services. CX-712C (Madisetti WS) at 68.

The claim term "peer-to-peer" has been construed to mean "having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power." Additionally, the term "capability addressable peer-to-peer data communication network" has been construed to mean "a peer-to-peer data communications network where messages may be addressed in some manner related to capability."

The Xbox console and accessory devices operate in a "capability addressable" data communication network. CX-712C (Madisetti WS) at 68. The Xbox console and accessory devices operate in a network where messages may be addressed in some manner related to capability. For example, force feedback messages will be sent only to devices that provide force feedback capability, CX-712C (Madisetti WS) at 66-67; CX-639C 23-24 (RFA 170-172); Russo Tr. 1018; CX-650C (Russo Dep. Tr.) 65; McNair Tr. 1094-1098; rumble messages will be sent only to devices that provide rumble capability, Russo Tr. 1018; and audio data will be sent only to devices that provide a speaker output capability, Russo Tr. 1018; McNair Tr. 1094-1098.

The network is "peer-to-peer." Consistent with the '896 patent's explicit definition of the term (which Motorola proposes as the proper construction), the Xbox

360 console and wireless accessories share portions of the Xenon Wireless Protocol.[34] CX-712C (Madisetti WS) at 68; RX-319C (Russo WS) at 2 (protocol had to be "robust"); CX-521C (Xenon Spec.). For example, the console and accessory devices share understandings of a TDMA kind of framework,[35] McNair Tr. 1083-1088; CX-521C (Xenon Spec.) at 17 & Figs. 5-1 and 5-2; CX-712C (Madisetti WS) at 26-28; share common frequency channels, McNair Tr. 1089; CX-712C (Madisetti WS) at 32; CX-521C (Xenon Spec.) at 22-24 & Tbl. 5-6; share encryption technique and parameters, McNair Tr. 1089; share common forward error correction techniques, McNair Tr. 1089-1090; CX-712C (Madisetti WS) at 33; CX-521C (Xenon Spec.) at 20; share common scrambling techniques, McNair Tr. 1090; share knowledge of a frequency hopping pattern, McNair Tr. 1091; CX-712C (Madisetti WS) at 31-32; CX-521C (Xenon Spec.) at 51 & Fig. 10-2; share a common synchronization pattern, CX-712C (Madisetti WS) at 32; CX-521C (Xenon Spec.) at 19 & Tbl. 5-2; and understand each other's messaging formats, Russo Tr. 1018-1019. *See also* Madisetti Tr. 274-277.

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[34] Microsoft's expert, Mr. McNair, asserts that the Xenon Wireless Protocol is not a protocol. RRX-68C (McNair RWS) at 14. Mr. McNair's testimony cannot be squared with Microsoft's Xenon Wireless Protocol Specification, which not only uses "Protocol" in its title, but says in its first sentence that "The purpose of this document is to describe the protocol for Xenon Wireless game pad as it occurs on the RF air interface." CX-521C (Xenon Spec.) 13. Mr. McNair's testimony also cannot be squared with the sworn testimony of Microsoft engineer David Russo, who repeatedly referred to the Xenon Wireless Protocol Specification as a "protocol" after explaining that wireless operations are a "key part" of his responsibilities. RRX-96C (Russo) 1; RX-319C (Russo WS) at 9. On cross-examination, Mr. McNair attempted to dismiss this sworn testimony of Microsoft's engineer as "not well thought through." McNair Tr. 1081.

[35] Although in his Rebuttal Witness Statement Mr. McNair stated that "TDMA is not a protocol," the '896 expressly states otherwise. On cross-examination Mr. McNair admitted that he describes TDMA as a protocol when he is working as an engineer rather than testifying for Microsoft. RRX-68C (McNair RWS) at 21; JX-5 at col. 3, lns 50-56; McNair Tr. 1087-1088.

The first step of claim 1 recites:

> **initiating a setup connection between first and second peers of said network by transmitting an unsolicited message containing an identification of said first peer to said second peer;**

Motorola has established that this claim limitation is satisfied.

The claim term "setup wireless connection" has been construed to mean "an initial connection over which two peers can negotiate an addressed service connection." Additionally, the term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network."

The Xbox system performs this step. CX-712C (Madisetti WS) at 69. Specifically, the Xbox console automatically transmits a broadcast message in each frame. CX-712C (Madisetti WS) at 28-29, 69; CX-521C (Xenon Spec.) at 17 Figs. 5-1 and 5-2, 49 ("The broadcast packet . . . is repeated automatically in every frame."), 81 Fig 17-1 ("host sends broadcast packet"), 82; Madisetti Tr. 333-335, 346; McNair Tr. 1048-1049. This message is unsolicited—it is broadcast automatically [ ] and is not solicited by the accessory device. CX-712C (Madisetti WS) at 38-39, 71; Madisetti Tr. 206; 208; 334-335; McNair Tr. 1048-50 ("Q. It's not sent in response to any solicitation from another network node, correct? A. That's correct.").

The broadcast message includes the [.] CX-712C (Madisetti WS) at 29, 69, 71; CX-521C (Xenon Spec.) at 50 Fig. 10-2; CX-650C (Russo Dep. Tr.) 25; Madisetti Tr. 212-213; CX-639C 17 (RFA 157). The Host XID is [ ] and the Host ID is [ ] CX-712C (Madisetti WS) at 71; CX-521C

(Xenon Spec.) at 13.

The broadcast message initiates a setup connection. CX-712C (Madisetti WS) at 72; RX-319C (Russo WS) at 9; Madisetti Tr. 334-335.[36] When a controller receives the unsolicited message, it sends a link control request message back to the first peer (console). *Id.*

When an accessory device is within range of the console, it will receive the broadcast packet. CX-712C (Madisetti WS) at 69-70; CX-521C (Xenon Spec.) at 83 Fig. 17-2 (Showing path from "Received it?" to "Select one channel and stay on it for the broadcast packet").

The Xbox console and accessory devices are microprocessor-based electronic devices that share portions of the Xenon Wireless Protocol with each other, as discussed above. CX-712C (Madisetti WS) at 70-71; Madisetti Tr. 197; 273-277. Additionally, consistent with Microsoft's construction of "peer," each device can establish a network, CX-521C (Xenon Spec.) at 83 ("[D]evice and host establish the RF link. Either side can reject or release the link . . . ."); and each can initiate a connection without the involvement of servers, RX-319C (Russo WS) at 9 (console initates connection); CX-521C (Xenon Spec.) at 84 ("The data link is initiated from the Wireless Device."); Madisetti Tr. 268; 335 (server not required).

The transmission of the broadcast message by the Xbox console, as detailed

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[36] Microsoft's expert agrees that the broadcast packet is not sent in response to a node request and that it is ever present. He also agrees that the broadcast packet is not sent in response to any solicitation from another network node and that it is sent continuously every 8 ms even when there is no wireless accessory within range. McNair Tr. 1049-1051. Inexplicably, Mr. McNair asserts that this broadcast packet is not an unsolicited message. McNair Tr. 1049.

above, invites the creation of a wireless connection between the console and an accessory device that can be used to negotiate an addressed service connection. CX-712C (Madisetti WS) at 72; Madisetti Tr. 208. Specifically, the broadcast message, as per the Xenon Protocol, provides frequency hopping, timing and error-correction information, along with other shared protocol information, that enables an initial wireless connection between the console—the first peer—and the accessory device—the second peer. Madisetti Tr. 201-202; 208.

As explained more fully with respect to the "exchanging" and "selectively processing" steps, the initial connection between the Xbox console and accessory devices is used to exchange needs and capabilities to determine whether to create an addressed service connection and therefore meets the requirements of Microsoft's construction of "setup connection" as well. CX-712C (Madisetti WS) at 72.

The second step of claim 1 recites:

> **authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer:**

Motorola has established that this claim limitation is satisfied.

The claim term "authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer" has been construed to mean "permitting said second peer to establish said setup connection with said first peer as a result of said identification of said first peer."

The Xbox system performs this step of claim 1. CX-712C (Madisetti WS) at 72. "Permitting said second peer to establish said setup connection with said first peer as a result of said identification of said first peer"—the accessory device will compare the

Host XID information contained in the header of the Xbox console's broadcast message to the Host XID information stored in the accessory device to determine whether it is permitted to establish a setup connection.[37] CX-712C (Madisetti WS) at 39, 73; Madisetti Tr. 240-241; CX-521C (Xenon Spec.) at 81 ("Validation"), 83 Fig. 17-2 ("Match host ID?"); CX-650C (Russo Dep. Tr.) 54-55. If the two sets of information do not match, then no connection will be established. CX-712C (Madisetti WS) at 40, 73; McNair Tr. 1051-52; CX-521C (Xenon Spec.) at 83 Fig. 17-2 ("No"); Russo Tr. 1051-1052. But if the two sets of information do match, then the device will be permitted to establish an initial connection with the Xbox console. CX-712C (Madisetti WS) at 73; McNair Tr. 1050-1051; CX-521C (Xenon Spec.) at 81 (Validation), 83 Fig. 17-2 ("Yes"); Russo Tr. 1051-1052.

The third step of claim 1 recites:

> **exchanging needs and capabilities between said first and second peers after establishing said setup connection; and**

Motorola has established that this claim limitation is satisfied.

The claim term "exchanging needs and capabilities between said first and second peers" has been construed to mean "the first and second peers transmit to each other information about their respective needs (if any) and capabilities (if any)."

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[37] The accessory device stores Host ID information in its non-volatile memory during an earlier "binding" process, which "is to set up the association between console host and the wireless peripherals." CX-521C (Xenon Spec.) 78; CX-712C (Madisetti WS) at 34, 40. The binding process is a simple process that involves two button presses. Russo Tr. 1026-1027; Madisetti Tr. 338-342. The binding process, which enables the subsequent wireless connections that infringe the patent, is described in detail in Section 16 of the Xenon Wireless Protocol Specification. CX-521C (Xenon Spec.) 78-80.

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The Xbox system performs this step. CX-712C (Madisetti WS) at 74. Specifically, the Xbox console and an accessory device engage in several exchanges of needs and capabilities, both during the discovery process and subsequent to the discovery process. *Id.* For example, during the discovery process, [

][38] CX-521C (Xenon Spec.) at 81, 83 & Fig. 17-2; CX-712C (Madisetti WS) at 43, 74; McNair Tr. 1066. Specifically, a [

] CX-521C (Xenon Spec.) at 37 Tbl. 7-17; [

] CX-521C (Xenon Spec.) at 44-45 Fig. 8-5. CX-712C (Madisetti WS) at 43, 74-75; Madisetti Tr. 214-216, 346-347; Russo Tr. 1017-1018.

As another example, [

] *See* CX-521C (Xenon Spec.) at 82-83 & Fig. 17-1 [

[38] Microsoft asserts that link control packets relate only to the assignment of logical communication ports, not to functionality that the Xbox console can provide. This is incorrect. The Xbox console has [

] CX-712C (Madisetti WS) at 40-42; Madisetti Tr. 214-216; CX-650C (Russo Dep. Tr.) 34. These are capabilities that respond to specific needs.

]; CX-712C (Madisetti WS) at 44, 75-76; Madisetti Tr. 346-348.[39]

As another example, [ ] CX-712C (Madisetti WS) at 45, 76-77; CX-521C (Xenon Spec.) at 83 Fig. 17-2. If the device is a data-type accessory device, such as a game controller, [ ] CX-521C (Xenon Spec.) at 37 Tbl. 7-18; CX-712C (Madisetti WS) at 46-48, 77-78. The device reports, among other things, include [ ] CX-712C (Madisetti WS) at 47-48, 78; Madisetti Tr. 346-348. For example, the Controller Device Type and Version Report includes [ ] CX-521C (Xenon Spec.) at 30; CX-712C (Madisetti WS) at 48; CX-650C (Russo Dep. Tr.) 60; Russo Tr. 1017-1018. The Device State Report includes [ ] CX-712C (Madisetti WS) at 49, 78; CX-521C (Xenon Spec.) at 31; Russo Tr. 1017-1018. Other device reports provide information concerning, for example, [

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[39] Although Microsoft's expert stated during the hearing that he would not describe the Xbox 360 console as providing access to audio portions of a game session for a wireless headset, he admitted that he did agree with that statement during his deposition. McNair Tr. 1059-1060.

[40] The rumble motor will cause the controller to vibrate under certain game circumstances to enhance the gaming experience. CX-712C (Madisetti WS) at 49.

][41] CX-712C (Madisetti WS) at 49-51, 78; CX-523C 8; CX-526C; CX-650C (Russo Dep. Tr.) 65. If the accessory is a voice device, the link control ACK message contains [ ] CX-712C (Madisetti WS) at 51-52, 78; CX-521C (Xenon Spec.) at 45.

As another example, if the accessory is an integrated data and voice device (*i.e.*, a device with both data and voice components such as a controller with a wired headset plugged into it), the device will need the voice, as well as the data, portions of, for example, a gaming session. CX-712C (Madisetti WS) at 78-79. [ ] CX-712C (Madisetti WS) at 60, 78-79; CX-521C (Xenon Spec.) at 29, 33-34; Russo Tr. 1022. The Xbox 360 console will ensure [ ] CX-712C (Madisetti WS) at 61, 79; CX-521C (Xenon Spec.) at 29-30, 33-34 and 58; Madisetti Tr. 347-348.

As another example, particular games may require voice input in a particular voice data encoding format. CX-712C (Madisetti WS) at 79. The Xbox 360 system, as detailed above, [ ] *Id.* If a game requires the use of one of these formats in particular, the Xbox console will [ ] CX-712C (Madisetti

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[41] [ ] CX-712C (Madisetti WS) at 51.

WS) at 61-63, 79; Madisetti Tr. 232-33; CX-521C (Xenon Spec.) at 41, 65-66; CX-525C at 51, 62. This message is a statement of the console's "need." CX-712C (Madisetti WS) at 79; Madisetti Tr. 347-49. If a voice-type accessory is [

]

The fourth step of claim 1 recites:

> **selectively processing an addressed service connection in response to said exchange of needs and capabilities.**

Motorola has established that this claim limitation is satisfied.

The claim term "addressed service connection" has been construed to mean "a connection over which service(s) can be provided to addressed peer(s)." Additionally, the term "selectively processing an addressed service connection" has been construed to mean "selectively using an addressed connection for the provision of one or more services."

The Xbox system performs this step. CX-712C (Madisetti WS) at 80-82; Madisetti Tr. 355-356. Assuming the discovery process is completed successfully, a service connection is established. *Id.* Thereafter, the console will provide gateway or routing connectivity to the requested voice or data portion of the gaming session and will use the information it received from the accessory [ ] to choose whether, how, and when to request the functionalities that the accessory can offer. CX-712C (Madisetti WS) at 57, 80-82; CX-650C (Russo Dep. Tr.) 33; McNair Tr. 1055-58. For example, as detailed above, the console may select to send audio information

from a game to an Xbox 360 Wireless Headset based on the needs and capabilities exchange. McNair Tr. 1059-1060. As another example, it may select to send force feedback information only to an accessory device that has force feedback capabilities, such as the Xbox Wireless Speed Wheel, or rumble information only to a device that supports rumble motor. *See* CX-712C (Madisetti WS) at 58-59, 66-67, 80-82; CX-639C 23-24 (RFA 170-172); CX-650C (Russo Dep. Tr.) 65; Russo Tr. 1015-1018.[42] Similarly, voice information is not sent to a device incapable of processing voice. CX-712C (Madisetti WS) at 80; McNair Tr. 1094-1095.

Claim 12

The preamble of independent method claim 12 recites:

> **A method of operating a capability addressable peer-to-peer data communication network comprising the steps of:**

Motorola has established that this claim limitation is satisfied.

The claim term "peer-to-peer" has been construed to mean "having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power." Additionally, the claim term "capability addressable peer-to-peer data communication network" has been construed to mean "a peer-to-peer data communications network where messages may be addressed in some manner related to capability."

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[42] While Mr. McNair testified at first that he was not convinced that force feedback is sent only to accessories that support force feedback, and admitted that he did not ask for information about this issue, he ultimately conceded the point. McNair Tr. 1094-1095.

The method of claim 12 is performed whenever the Xbox console and an accessory device go through the discovery process. CX-712C (Madisetti WS) at 83.

As explained in the context of claim 1 above, if the preamble of claim 12 of the '896 patent is a limitation, the Microsoft Xbox gaming and entertainment system meets the limitation. CX-712C (Madisetti WS) at 83.

Step a) of claim 12 recites:

> **a) detecting, at a first one of a service-requesting peer and a service-providing peer, physical proximity of a second one of said service-requesting and service-providing peers;**

Motorola has established that this claim limitation is satisfied.

The claim term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network." Additionally, the term "physical proximity" has been construed to mean "within range of a peer in a low power wireless network."

The Xbox system performs this step. CX-712C (Madisetti WS) at 83-84. As explained above, the Xbox console (service-providing peer) will transmit a broadcast packet in every frame. *Id.* When powered on, an accessory device (service-requesting peer) will listen for a broadcast packet to detect whether an appropriate console is within range. *Id.*; CX-521C (Xenon Spec.) at 81. Motorola has proposed that the term "physical proximity" means "within range of a peer in a lower power wireless network." The Xbox 360 console and accessory devices function in a short-range, low-power wireless environment with approximately a 9-10 meter range and the broadcast packet transmitted by the console will be successfully detected only if the accessory is within

this range of the Xbox 360 console. CX-712C (Madisetti WS) at 85-86; Madisetti Tr. 246.

Step b) of claim 12 recites:

> **b) determining whether a need for a service connection exists at one of said service-requesting and service-providing peers;**

Motorola has established that this claim limitation is satisfied.

The claim term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network."

The Xbox system performs this step. CX-712C (Madisetti WS) at 86; Madisetti Tr. 246-48. When powered on or brought into range of an Xbox console with an active gaming session, the accessory device will determine that it has a need for a service connection. CX-712C (Madisetti WS) at 86. If the accessory device is a data-type device, then it will determine that it has a need for the Xbox 360 console to provide a specific functionality—gateway or routing connectivity to the data portions of a gaming session. *Id.* at 87. If the accessory device is a voice-type device, then it will determine that it has a need for gateway or routing connectivity to the voice portions of a gaming session. *Id.* [

]. *Id.*; CX-521C (Xenon Spec.) at 82 & Fig. 17-2.

Step c) of claim 12 recites:

> **c) establishing, if said determining step identifies said need, a setup wireless connection between said service-requesting and service-providing peers;**

Motorola has established that this claim limitation is satisfied.

The claim term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network." Additionally, the term "setup wireless connection" has been construed to mean "an initial wireless connection over which two peers can negotiate an addressed service connection."

The Xbox system performs this step. CX-712C (Madisetti WS) at 88. If the service-requesting peer—here, the accessory device—determines a need for a service connection, it will, as detailed above, [

] *Id.* at 88-89. At this point, a setup wireless connection is established between the service-providing peer—the Xbox console—and the accessory device. *Id.*; CX-521 (Xenon Spec.) Figs. 17-1 and 17-2.

The setup wireless connection is the initial connection that is formed between the Xbox console and an accessory device during the discovery process, which is used to perform various service negotiations. CX-712C (Madisetti WS) at 89. As explained above in the context of claim 1, Microsoft's proposed construction of "setup wireless connection", while incorrect, is also met. *Id.* at 90.

Step d) of claim 12 recites:

> **d) communicating authorization information describing said service-requesting peer to said service-providing peer;**

Motorola has established that this claim limitation is satisfied.

The claim term "authorization information" has been construed to mean

"information used for authorization."

The Xbox system performs this step. CX-712C (Madisetti WS) at 90. After the Xbox 360 console has [

] CX-712C (Madisetti WS) at 52-55, 90; CX-521C (Xenon Spec.) at 81-82 & Figs. 17-1 and 17-2; CX-639C 24-25 (RFA 174). During the [

] CX-712C (Madisetti WS) at 53-55, 90; CX-521C (Xenon Spec.) at 81-82 & Figs. 17-1 and 17-2; CX639C 25 (RFA 175); CX-650C (Russo Dep. Tr.) 66-67. As part of this process, the accessory device [

] CX-712C (Madisetti WS) at 90; CX-521C (Xenon Spec.) at Fig. 17-2 [

].

[

] CX-712C (Madisetti WS) at 91.

Step e) of claim 12 recites:

> **e) forming a wireless service connection between said service-requesting and service-providing peers when said service-requesting peer is authorized through an identification code;**

Motorola has established that this claim limitation is satisfied.

The claim term "wireless service connection" has been construed to mean "a wireless connection over which services can be provided to peers." Additionally, the

claim term "authorized through an identification code" has been construed to mean "permitted using an identification code."

The Xbox system performs this step. CX-712C (Madisetti WS) at 92. As explained above, [

] CX-712C (Madisetti WS) at 55-57, 92-95; CX-521C (Xenon Spec.) at 81-82. If the response is incorrect, [ ]CX-712C (Madisetti WS) at 57, 93-94; CX-521C (Xenon Spec.) at 57; CX-650C (Russo Dep. Tr.) 68. If the response is correct, [

] CX-712C (Madisetti WS) at 94-95; CX-521C (Xenon Spec.) at 57.

[

] CX-712C (Madisetti WS) at 95; CX-639C 26 (RFA 178); CX-521C (Xenon Spec.) at 57, 82 Fig. 17-1 [

]; CX-650C (Russo Dep. Tr.) 68. The discovery complete message [

] CX-521C (Xenon Spec.) at 57.

The console uses the response code from the accessory device to [

] CX-712C (Madisetti WS) at 95.

Step f) of claim 12 recites:

> **f) communicating capability information describing said service-providing peer to said service-requesting peer;**

Motorola has established that this claim limitation is satisfied.

The Xbox system performs this step. CX-712C (Madisetti WS) at 95-96. As detailed in the context of the "exchanging" step of claim 1, above, in response to a valid link control request packet, [ ] identifying its capability to provide the requested functionality—gateway or routing connectivity to the voice or data portion of a gaming session. *Id.* at 96; CX-521C (Xenon Spec.) at Fig. 17-1.

The parties agree that the term "capabilities" means "functionality that a peer can perform for another peer over a service connection; capabilities do not relate to characteristics of the connection between the peers." The Xbox console communicates its capability to provide gateway or routing connectivity to the voice or data portion of a gaming session during the discovery process. CX-712C (Madisetti WS) at 96.

Step g) of claim 12 recites:

> **g) forming said wireless service connection between said service-requesting and service-providing peers when said service-providing peer is determined to have a capability compatible with said need determined in step b); and**

Motorola has established that this claim limitation is satisfied.

The claim term "wireless service connection" has been construed to mean "a wireless connection over which services can be provided to peers."

The Xbox system performs this step. CX-712C (Madisetti WS) at 96-97. A wireless service connection between an Xbox 360 console and an accessory is formed

based in part on whether an appropriate voice or data portion of a slot is available (*i.e.*, a capability exists) for the type of accessory requesting service (*e.g.*, data and/or voice). *Id.* In other words, if the console cannot provide the requested functionality, because it does not have an appropriate slot available, then no service connection will be formed with the accessory device. *Id.* This can happen, for example, if two devices attempt to connect to the same slot and no other slot is available. *Id.*

Step h) of claim 12 recites:

> **h) providing said capability using said service connection.**

Motorola has established that this claim limitation is satisfied.

The Xbox system performs this step. CX-712C (Madisetti WS) at 97. As described above in the context of the "selectively processing" step of claim 1, once a wireless service connection has been established, the Xbox console will provide the accessory device with the appropriate portion(s) of a gaming session. CX-712C (Madisetti WS) at 57, 97-98; CX-650C (Russo Dep. Tr.) 33.

3. Indirect Infringement

Motorola has not shown that Microsoft's accused products indirectly infringe all asserted claims of the '896 patent.

Motorola argues that Microsoft induces infringement and contributes to the infringement of claims 1 and 12 of the '896 patent. Compls. Br. at 30-31.

Microsoft argues that Motorola has not addressed all of the elements of indirect infringement. Resp. Br. at 147-50.

Motorola's pre-hearing brief included only a single sentence on indirect

infringement of the '896 patent. *See* Compl. P.H. Br. at 49. It did not include, and Motorola has therefore waived, any argument that the accused products lack substantial noninfringing uses or that Microsoft intends others to infringe. GR 7c; *see also* Madisetti Tr. 163.

The specific intent necessary to induce infringement "requires more than just intent to cause the acts that produce direct infringement. Beyond that threshold knowledge, the inducer must have an affirmative intent to cause direct infringement." *Kyocera Wireless Corp. v. Int'l Trade Comn'n*, 545 F.3d 1340, 1353 (Fed. Cir. 2008) (internal citations omitted). To show specific intent based on a product that has non-infringing uses, the patentee must make an "evidentiary showing that the defendant intended that the article be used for direct infringement." *Ricoh Co., Ltd. v. Quanta Computer Inc.*, 550 F.3d 1325, 1341 (Fed. Cir. 2008). Motorola has made no such showing.

Furthermore, Motorola offers no evidence that Microsoft had knowledge that the method in question "was both patented and infringing." *Global-Tech*, 131 S.Ct. at 2062. Motorola also has not shown that Microsoft possessed specific intent to encourage another's infringement. *Warner-Lambert Co. v. Apotex Corp.*, 316 F.3d 1348, 1364 (Fed. Cir. 2003) ("mere knowledge of possible infringement by others does not amount to inducement; specific intent and action to induce infringement must be proven").

A showing of substantial non-infringing use will defeat indirect infringement. *Spansion, Inc. v. Int'l Trade Comm'n*, 629 F.3d 1331, 1353 (Fed. Cir. 2010). Madisetti acknowledged that he has not offered the opinion that the use of wired Xbox controllers infringes the '896 patent. Madisetti Tr. 163. Wired controllers are one obvious example

of a substantial noninfringing use of an Xbox console.

C. Validity of the '896 Patent

Microsoft bears the burden of showing invalidity by clear and convincing evidence. *See Microsoft Corp. v. i4i Ltd. Partnership*, 131 S. Ct. 2238, 2242 (2011).

For the reasons set forth below, Microsoft has not shown by clear and convincing evidence that the asserted claims of the '896 patent are invalid.

1. International Patent Application PCT/NZ93/0004

The '004 reference does not disclose the first step of claim 1 of the '896 patent. Specifically, the '004 reference does not disclose the initiation of a setup connection by transmitting an unsolicited message and, indeed, is silent as to what initiates any connection between the nodes of the network. Although Mr. McNair testified that a beacon message serves to initiate a connection, RX-313 (McNair WS) at 17-18, the '004 reference explicitly teaches that beacon messages are not sent until *after* a device is connected to the network. RX-209 at 12 ("Upon connection a newly connected device sends out a beacon message . . . .").[43] Rather, the beacon message simply provides information as to which devices are already connected to the network. CX-721C (Madisetti RWS) at 6-7. Moreover, the '004 reference does not disclose a "setup connection" under either party's proposed construction as the '004 reference is silent as to how new peers connect. CX-721C (Madisetti RWS) at 6-7.

[43] Indeed, the '004 reference discloses exactly the type of network which was distinguished by the applicants during prosecution of the '896 patent. *See* JX-6 ('896 Patent File History) at 4637 ("In contrast, applicants' claim 1 calls for, among other things, that a setup connection between first and second peers of the network is initiated by transmitting an unsolicited message containing an identification of the first peer to the second peer.").

The '004 reference does not disclose the second step of claim 1 of the '896 patent. Specifically, there is no disclosure of any authorization step. As admitted by Mr. McNair, the concept of authorizing implies that there is a consequence for failing to authorize. McNair Tr. 1050. No such consequence is disclosed by the '004 reference. Mr. McNair testified that the absence of a device's callsign on the routing list transmitted as the beacon message serves to authorize the station to transmit, allowing it to establish a setup connection. RX-313 (McNair WS) at 17-18. However, the '004 reference does not disclose any concept of permission to establish a connection, as required by both parties' proposed constructions. CX-721C (Madisetti RWS) at 7-8. Nor would a person of ordinary skill in the art understand that callsigns must necessarily be used for authorization. To the contrary, callsign information can be used for a variety of other purposes. For example, the '004 reference expressly discloses the use of callsigns for routing, not authorization, purposes. *Id.* Moreover, as discussed above, there is no disclosure of a setup connection being established.

The '004 reference does not disclose the third step of claim 1 of the '896 patent. Specifically, the '004 reference does not disclose any transmission of information relating to "needs." Mr. McNair contends that needs are communicated "by omission." Specifically, he argues that the exchange of routing information "expresses the needs of the devices to communicate, conveying the devices they are aware of and, by omission, the devices they are not aware of and need to be made aware of." RX-313 (McNair WS) at 19. Yet, in the '896 patent, communications of needs are express, not "by omission." Moreover, the exchange of routing information does not convey anything about a need for connection or communication. Rather, the exchange simply provides the network

nodes with information about which peers are directly connected and which other peers may be reached through bridging peers, if such connections are ever required. CX-721C (Madisetti RWS) at 8-9. As discussed above, the '004 reference also fails to disclose a setup connection.

The '004 reference does not disclose the fourth step of claim 1 of the '896 patent. As explained above, the '004 reference does not disclose the claimed exchange of needs and capabilities. CX-721C (Madisetti RWS) at 9.

The '004 reference does not disclose the steps (b), (c), (d), (e), and (g) of claim 12 of the '896 patent for the same reasons discussed above. *See* CX-721C (Madisetti RWS) at 10-13. Furthermore, under Microsoft's incorrect proposed construction of "physical proximity," the '004 reference does not disclose step (a) which under Microsoft's construction requires the detection of "a predetermined distance." RRX-68C (McNair) 39; McNair Tr. 1042-43; CX-721C (Madisetti RWS) at 10-11.

2. The SWAN Reference

The SWAN reference ("SWAN") was disclosed to the Patent Office during prosecution of the '896 patent and describes dynamic topology management of a mobile wireless communication network. *See* JX-6 ('896 Patent File History) at 4372; RX-210 356. SWAN appears to be focused on providing efficient communication channels and improved quality of service overall, as opposed to the services themselves.

SWAN does not disclose the second step of claim 1 of the '896 patent. Specifically, SWAN does not disclose either a step of "authorizing . . . to establish [a] setup connection" or any authorization "based on said identification of said first peer." CX-721C (Madisetti RWS) at 14-15. SWAN discloses only that "[a]ny node hearing an

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originator may, at its discretion, request to become a neighbor of an originator . . . ." RX-210 356. There is, however, no disclosure of any circumstance in which in which the receiving node would not be permitted to connect, or in which the originator ID would form the basis for any such permission. The SWAN disclosure thus does not establish that the node's "discretion" constitutes either an authorization to establish a setup connection or an authorization based on any particular piece of information. Indeed, SWAN is silent as to how the originator's ID is used and provides no disclosure, either explicitly or inherently, that an authorization step occurs based on that ID. Instead, it appears that the connection is based entirely on the availability of free slots, rather than based on any authorization. Consequently, there is no authorization to establish any connection, let alone a "setup connection," as required by the claims. CX-721C (Madisetti RWS) at 14-15.

SWAN does not disclose the third step of claim 1 of the '896 patent. Specifically, SWAN does not disclose the transmission either of "needs" or "capabilities," as those terms have been jointly construed by the parties. CX-721C (Madisetti RWS) at 15-16. Mr. McNair identifies communication of information relating to attributes of the communications link itself (*e.g.*, quality and bandwidth)—the very "characteristics of the connection between the peers" that the parties stipulated are irrelevant to "needs" and "capabilities."[44] But Mr. McNair does not point to any services that may be provided by

[44] Microsoft argues that Motorola has taken an inconsistent position regarding the relationship between "slots" and "capabilities" in (1) the accused Xbox system and (2) the SWAN reference. Microsoft's argument is incorrect. As Dr. Madisetti has explained, the request for slot allocation disclosed by the SWAN reference differs from the link control request message transmitted during the discovery process of Microsoft's Xbox system, which requests the use of a particular slot *for the purpose of obtaining a*

the nodes using the communications link. RX-313 (McNair WS) at 23-24 ("SWAN provides this functionality by negotiating connection parameters . . . ."); RX-210 356.

SWAN does not disclose the fourth step of claim 1 of the '896 patent. First, the SWAN reference does not disclose the exchange of needs and capabilities, as discussed above. Second, there is no disclosure in the SWAN reference of selectively using an addressed connection for the provision of one or more services (*i.e.*, selectively processing). CX-721C (Madisetti RWS) at 16.

The SWAN reference does not disclose steps (b)–(h) of claim 12 for the reasons discussed above. CX-721C (Madisetti RWS) at 17. Furthermore, even under Microsoft's incorrect proposed construction of "physical proximity," the '004 reference does not disclose step (a) which under Microsoft's construction requires the detection of "a predetermined distance." RRX-68C (McNair) 39; McNair Tr. 1042; CX-721C (Madisetti RWS) at 17.

3. U.S. Patent 6,094,575

U.S. Patent No. 6,094,575 ("the '575 patent") describes a wireless communications network architecture, involving one or more base stations (BS) and one or more mobile stations (MS). RX-208.

The '575 patent does not disclose the second step of claim 1 of the '896 patent. Specifically, there is no disclosure of an authorization scheme involving the identification of a first peer. CX-721C (Madisetti RWS) at 20-21. Mr. McNair argues that the MS evaluates the BS identified in the General Poll (BS ID) to determine whether it wished to

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***particular** functionality*. CX-721C (Madisetti RWS) at 15; Madisetti Tr. 2210-11; 2213-14.

acquire a link to the BS. RX-313 (McNair WS) at 27. However, there is no disclosure of such an evaluation in the '575 patent, much less any disclosure of any permission on the basis of BS ID, as would be required by both parties' proposed constructions of this claim step. Furthermore, as Dr. Madisetti testified, a person of ordinary skill would not understand that the MS must necessarily perform an authorization (or even any evaluation) based on the Base ID information that is received. For example, the MS could establish a setup connection solely on the basis of the information received in the Slot Quality portion of the General Poll message, as described in Column 68 (and Column 144) of the '575 patent. The MS could use the Base ID information for purposes other than authorizing the MS to establish a setup connection. For example, the Base ID information could be used to separately process packets from multiple base stations during a hand-off routine (*e.g.*, a neighbor list). CX-721C (Madisetti RWS) at 20-21.

The '575 patent does not disclose the third step of claim 1 of the '896 patent. There is no disclosure in the '575 patent that either the BS or the MS transmits any "needs" information. Further, the MS Capabilities and BS Capabilities disclosed by the '575 patent identify only attributes of the communications link (*e.g.*, ciphering or the ability to receive FAX data), not services that may be provided by the MS or the BS, such as printing a fax or annunciating data over a speaker.[45] *See* RX-208 at col. 131, lns. 44-55; Madisetti Tr. 2214-19. Additionally, the '575 patent does not disclose an initial setup connection that is formed between an MS and a BS to permit further negotiation of a

[45] In the 'Background of the Invention' section, the '896 patent describes the ability to receive a fax—a specified '575 patent capability—as not the type of capability the '896 discloses. *See* JX-5 at col. 1, lns. 8-43 ("For example, a portable telephone could receive a facsimile (fax), but typically has no capability to print the fax and typically has no capability to communicate with a printer which may be able to print the fax.").

service connection. CX-721C (Madisetti RWS) at 21-22.

The '575 patent does not disclose the fourth step of claim 1 of the '896 patent. First, as explained above, the '575 patent does not disclose the exchange of needs and capabilities. Second, the '575 patent does not include any disclosure of selectively using an addressed service connection for the provision of one or more services (*i.e.*, selectively processing). Instead, the '575 patent simply discloses that a BS and an MS can communicate. CX-721C (Madisetti RWS) at 22.

The '575 patent does not disclose steps (b), (c), (f), (g) and (h) of claim 12, for the reasons discussed above. CX-721C (Madisetti RWS) at 23-25. Under Microsoft's incorrect proposed construction of "physical proximity," the '004 reference does not disclose step (a) which under Microsoft's construction requires the detection of "a predetermined distance." RRX-68C (McNair) 39; McNair Tr. 1042-43; CX-721C (Madisetti RWS) at 23.

4. WaveLAN Paper

The WaveLAN reference ("WaveLAN") describes at a high level the characteristics of a model for a wireless local area network (W-LAN).

WaveLAN does not disclose the first step of claim 1 of the '896 patent. Specifically, WaveLAN does not disclose the initiation of an initial connection to permit further negotiations of a service connection (*i.e.*, a setup connection). CX-721C (Madisetti RWS) at 26.

WaveLAN does not disclose the second step of claim 1 of the '896 patent. Mr. McNair argues that only the frames from a mobile station using the correct NWID are forwarded to the MAC (Media Access Control) layer of the protocol so the authorization

of the second peer to establish a connection with the first peer is based on the first peer identification. RX-313 (McNair WS) at 31-32. This opinion, however, does not relate to the establishment of a setup connection or the authorization of a peer to establish a service connection. Rather, this relates to so-called "filtering" of NWID within the mobile station's network stack, potentially to minimize its processing requirements once a connection has been established. As Dr. Madisetti testified, a person of ordinary skill would not understand that the MS must necessarily perform an authorization (or even any evaluation) based on the NWID information received. Specifically, the MS could establish a setup connection solely on the basis of the network's communications quality, as described on page 1446 of the WaveLAN reference: "The Sign-on protocol is used by an MS when it is initially activated, after it has discovered an AP with an acceptable RF communications quality (based on beacon analysis)." CX-721C (Madisetti RWS) at 26-27.

WaveLAN does not disclose the third step of claim 1 of the '896 patent. WaveLAN's disclosure of routing tables, OSPF protocol, and the concepts of the so-called SNAP model are not "needs" and "capabilities," as the parties have jointly construed those terms. As Dr. Madisetti explains, routing tables are used to make the network run correctly; they are not related to the provision of services at either peer. Similarly, the OSPF protocol and SNAP model, to the extent they are disclosed in WaveLAN, do not relate to the input or output capabilities or other services that the peers may offer.[46] Also, any implied negotiation of these network-related routing resources, as

[46] Mr. McNair's reliance on the SNAP model is also improper. Mr. McNair did not cite to any specific SNAP document; Microsoft did not produce any documents regarding

disclosed in WaveLAN, does not indicate that needs or capabilities (as claimed in the '896 patent) are ever exchanged. WaveLAN also does not disclose an initial setup connection that is formed between a mobile station and an access point to permit further negotiation of a service connection. CX-721C (Madisetti RWS) at 27-28.

WaveLAN does not disclose the fourth step of claim 1 of the '896 patent. First, WaveLAN does not disclose the exchange of needs and capabilities, as explained earlier. Second, WaveLAN does not identify any disclosure of choosing to use a service connection to provide particular services (selectively processing). Instead, WaveLAN discloses merely that an access point and a mobile station can communicate. CX-721C (Madisetti RWS) at 28-29.

Assuming it is limiting, WaveLAN does not disclose the preamble of claim 12 for the reasons discussed above. CX-721C (Madisetti RWS) at 29. Additionally, WaveLAN does not disclose steps (b), (c), (d), (f), (g), and (h) of claim 12 for the reasons discussed above. CX-721C (Madisetti RWS) at 29-31. WaveLAN also does not disclose step (e) of claim 12 of the '896 patent. Mr. McNair relies on the handover process to satisfy this step. But WaveLAN does not disclose the forming of a service connection during the handover process based on authorization or the use of an identification code. To the contrary, WaveLAN discloses handover occurring based solely on the quality of signal received from nearby access points. RX-212 at 1446. CX-721C (Madisetti RWS) at 30-31. Furthermore, should the Commission adopt Microsoft's incorrect proposed

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SNAP. Nor does WaveLAN incorporate by reference the SNAP specification. *See Commonwealth Scientific & Indus. Research Org. v. Buffalo Tech.*, 542 F.3d 1363, 1372 (Fed. Cir. 2008) ("To incorporate material by reference, the host document must identify with detailed particularity what specific material it incorporates and clearly indicate where that material is found in the various documents").

construction of "physical proximity," the '004 reference does not disclose step (a) which under Microsoft's construction requires the detection of "a predetermined distance." RRX-68C (McNair) 39; McNair Tr. 1042-43; CX-721C (Madisetti RWS) at 29.

5. U.S. Patent 5,546,448 in Combination with ITU V.34

U.S. Patent No. 5,546,448 ("the '448 patent") discloses a modem interface for use in a wired communication system. The V.34 reference discloses technical aspects of a 28.8 kbps modem, designed to operate in a wired environment.

The combination of these two reference does not disclose or render obvious the third step of claim 1 of the '896 patent. Neither the '448 patent nor the V.34 reference discloses any communication of "needs" or "capabilities," as the parties have jointly construed those claim terms. Mr. McNair relies on "data rates" and "power levels," but, as the parties have stipulated, these are not the "needs" and "capabilities" of the '896 patent. RX-313 (McNair WS) at 39; CX-721C (Madisetti RWS) at 32-33. Modem handshake procedures were well-known to the inventors of the '896 patent and are distinguished from the types of needs and capabilities exchanges the patent sought to cover. CX-721C (Madisetti RWS) at 32-33.

The combination of these two references does not disclose the fourth step of claim 1 of the '896 patent. First, as explained earlier, neither reference discloses the required exchange of needs and capabilities. Second, neither reference includes a disclosure of selectively using an addressed service connection for the provision of one or more services (*i.e.*, selectively processing). CX-721C (Madisetti RWS) at 33. Indeed, Mr. McNair relies only on communications within the network at common operating speeds and similar communication level parameter matching. RX-313 (McNair WS) at 39-40.

6. Secondary Considerations

There was, at the time Borgstahl, et al., invented the claimed methods of the '896 patent, a long-felt need for a wireless, peer-to-peer, capability addressable network. *See* CX-721C (Madisetti RWS) at 33-34; CX-713C. At the time of the invention of the '896 patent, short-range wireless technologies had no way of connecting the right peers without knowing their unique network address. *See* CX-721C (Madisetti RWS) at 33-34; CX-713C. The need for the invention of the '896 patent was clear, and long-felt.

Products incorporating the patented invention, such as the Droid X and Droid 2 smartphones, as well as related products such as the CommandOne Bluetooth Headset, have enjoyed commercial success, as do the products sold by infringers of the '896 patent, including Respondent. CX-721C (Madisetti RWS) at 33-34. Motorola's revenues derived from sales of the Droid 2 and Droid X totaled over [ ]. *See* CX-565C. The Droid 2 and Droid X's ability to establish service connections based on exchange of needs and capabilities was a substantial and motivating factor in its commercial success, notwithstanding the existence of additional features. *See* CX-721C (Madisetti RWS) at 33-34. Motorola also has licensed the '896 patent to others.

Microsoft's expert, Mr. McNair performed no analysis and provided no opinion on secondary considerations of non-obviousness. McNair Tr. 1102.

7. Written Description

Mr. McNair argues that the terms "authorizing said second peer to establish said setup connection with said first peer based on said identification of said first peer" and "forming a wireless service connection between said service requesting and service-providing peers when said service-requesting peer is authorized through an identification

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code" lack written description support, because there is allegedly insufficient disclosure of "authorization based on the identification of the first peer." Mr. McNair is incorrect.

It is well established that the originally-filed claims provide written description support. *See Union Oil Co. of California v. Atlantic Richfield Co.*, 208 F.3d 989, 998 (Fed. Cir. 2000). Authorization processes based on the identification of the first peer were disclosed by the claims that accompanied the originally-filed application for the '896 patent. For example, application claims 20 and 21 included the following steps:

> d) communicating authorization information ***describing said service-requesting peer to said service-providing peer***;
>
> e) determining ***whether to form a wireless service connection*** between said service-requesting and service-providing peers ***in response to said authorization information.***

JX-6 ('896 Patent File History) at 4340-41. The broad term "authorization information" certainly encompasses, and provides adequate support for, an identification number used for authorization.

Additionally, the '896 patent discloses:

> Task 62 initiates a setup connection by broadcasting a need/capability message 64, an exemplary format for which is depicted in FIG. 7. Referring to FIG. 7, message 64 includes an ID 66 for the peer 20 broadcasting message 64, an authorization key 68, a need specification 70, a capability specification 72, and can include other data elements. . . . Authorization key 68 includes one or more data codes which may be used by a receiving peer 20 in performing an authorization process.

JX-5 at col. 6, lns 41-52.

> When task 58 eventually detects that a setup connection is being attempted by receiving a message 64, a task 78 performs an authorization process. Task 78 uses

> authorization key 68 (see FIG. 7) from message 64 to determine if the peer 20 attempting to setup a connection is authorized to connect to the receiving peer 20. Task 78 allows an owner of a peer 20 to restrict access to the owned peer 20 through network 22. The authorization process of task 78 may be used, for example, to restrict personalization capabilities of an appliance to a small family group.

Id. at col. 7, lns. 39-59.

As Dr. Madisetti explained, a person of ordinary skill in the art would understand from these teachings that the inventors were in possession of, and had disclosed, an authorization routine. CX-721C (Madisetti RWS) at 34-36. In the preferred embodiments, the authorization routine may be based on an authorization key and, as Dr. Madisetti explained, a device's ID (or some other piece of information describing a device) can serve as an authorization key. Indeed, as taught by application claim 20, the communicated authorization information could "describ[e] said service requesting peer."

Mr. McNair also argues that Claim 12 is indefinite because one having ordinary skill in the art is not able to determine whether the two "forming" steps of the claim are in the alternative to each other, or in addition to each other. However, the claim language itself answers this question: by separately identifying both steps and connecting them with the word "and," the claim makes clear that the conditions identified in both steps, not just one or the other, must be satisfied. The '896 patent prosecution history points to the same conclusion. The two "forming" steps were incorporated into application claim 20 (which became claim 12) during prosecution. In explaining those steps to the Examiner, the applicants made clear that the requirements set forth in those steps were "in addition" to each other, not in the alternative:

> Applicants' claim 20 recites, among other things, a method of operating a capability addressable peer-to-peer data communication network. Authorization information is communicated that describes the service-requesting peer to the service-providing peer. A wireless service connection is formed between the service-requesting and service-providing peers when the service-requesting peer is authorized. In addition, the wireless service connection is formed between the service-requesting and service-providing peers when the service-providing peer is determined to have a capability compatible with the need.

JX-6 ('896 Patent File History) at 4640.

In view of the language of the claim itself, as further informed by the applicants' discussion during prosecution, a person of ordinary skill in the art would understand that both "forming" steps must occur as part of the claimed method—*i.e.*, that both "when" conditions must be met—and that the "providing" step must use the resulting service connection. CX-721C (Madisetti RWS) at 36-38. Indeed, Microsoft did not assert that either "forming" step was indefinite in the parties' joint identification of terms and proposed constructions. For these reasons, Microsoft has filed to meet its high burden of proving that Claim 12 is insolubly ambiguous. *See, e.g.*, *IGT*, 659 F.3d at 1119 ("A claim is only indefinite if it is not amenable to construction or is insolubly ambiguous."); *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1366 (Fed. Cir. 2011) ("Because claim construction frequently poses difficult questions over which reasonable minds may disagree, proof of indefiniteness must meet '*an exacting standard.*'") (emphasis added).

D. Domestic Industry (Technical Prong)

Motorola's Domestic Industry Bluetooth products are Droid 2 and Droid X smartphones (among other Bluetooth-enabled products). CX-712C (Madisetti WS) at 3-4, 112. Each of these products is compliant with version 2.1 of the Bluetooth

Specification, CX-44; CX-47; McNair Tr. 1104-1105, which implements the invention of the '896 patent. CX-713C (Leeper WS) at 5-6; Leeper Tr. 138-39.

For the reasons set forth below, Motorola has satisfied the technical prong of the domestic industry requirement with respect to the '896 patent.

Claim 12

The preamble of independent method claim 12 recites:

> **A method of operating a capability addressable peer-to-peer data communication network comprising the steps of:**

Motorola has satisfied the preamble.

The claim term "peer-to-peer" has been construed to mean "having at least common portions of communications protocol and/or capability and does not refer to equivalence of physical size, functional capability, data processing capacity or transmitter/receiver range or power." Additionally, the claim term "capability addressable peer-to-peer data communication network" has been construed to mean "a peer-to-peer data communications network where messages may be addressed in some manner related to capability."

The preamble is practiced by Motorola's Domestic Industry Bluetooth products. Motorola's Droid 2 and Droid X products, as well as related products such as Motorola's CommandOne Bluetooth Headset, can operate in a peer-to-peer data communication network, sharing portions of the common protocol established in the Bluetooth Specification.[47] CX-712C (Madisetti WS) at 112.

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[47] Microsoft has asserted that a Bluetooth network is not a "peer-to-peer" network, and that the Motorola devices are not "peers," because the Bluetooth Specification often uses

Step a) of claim 12 recites:

> **a) detecting, at a first one of a service-requesting peer and a service-providing peer, physical proximity of a second one of said service-requesting and service-providing peers;**

Motorola has satisfied this claim step.

The claim term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network." Additionally, the term "physical proximity" has been construed to mean "within range of a peer in a low power wireless network."

The Motorola Domestic Industry Bluetooth products perform this step. CX-712C (Madisetti WS) at 114. A Motorola Bluetooth-compliant product, such as the Droid 2, will engage in an inquiry routine to discover whether other Bluetooth devices are within range of the inquiring device. *Id.* at 100-102. During the inquiry routine, an unaddressed message is broadcast (here, by the exemplary Droid 2) 1600 times per second on frequency-hopped channels. *Id.* at 100-101, 114; CX-520 (BT Spec.) vol. 2, pp. 155, 160. In the Motorola Android source code of the Droid 2, the inquiry routine is initiated any time the function doDiscovery() is invoked. CX-712C (Madisetti WS) at 102. Any discoverable device, such as a Droid X, will detect the broadcasted inquiry message. CX-712C (Madisetti WS) at 100; CX-520 (BT Spec.) vol. 2, pp. 155, 160.

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the terms "master" and "slave" when referring to Bluetooth communications. But the '896 patent's explicit definition of "peer-to-peer" does not preclude the peers from being in a master/slave arrangement. CX-712C (Madisetti WS) at 112-13. Moreover, Bluetooth networks are consistently referred to in industry publications and textbooks as peer-to-peer networks. Indeed, the official Bluetooth Specification itself repeatedly refers to Bluetooth communications as "peer-to-peer." CX-520 (BT Spec.) vol. 2, p. 855; CX-712C (Madisetti WS) at 112-13; Madisetti Tr. 260; 267.

Motorola has proposed that the term "physical proximity" means "within range of a peer in a low power wireless network." The Motorola Bluetooth products operate in a short-range low-power communications system with a range of 10 meters (about 33 feet). Carrying forward the concept of the '896 patent, the Bluetooth Specification explains that the service discovery protocol is intended to address the unique characteristics of the environment, "where the set of services that are available changes dynamically based on *the RF proximity of devices* in motion." CX-520 (BT Spec.) vol. 3, p. 133 (emphasis added); CX-712C (Madisetti WS) at 102, 114-15. Also, because Bluetooth devices are designed to connect with one another within a distance of 10 meters, this limitation is met even under Microsoft's construction. CX-712C (Madisetti WS) at 102, 115-16; CX-48.

Step b) of claim 12 recites:

> **b) determining whether a need for a service connection exists at one of said service-requesting and service-providing peers;**

Motorola has satisfied this claim step.

The claim term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network."

The Motorola Domestic Industry Bluetooth products perform this step. CX-712C (Madisetti WS) at 116. This step is performed whenever an application running on the service-requesting peer, for example the Droid 2, determines that it needs a particular service, such as a secondary input or display for a Bluetooth-enabled game. *Id.* Once a service-requesting device has determined that it has a need for a particular service (identified by a "Universally Unique Identifier" (UUID)), it will initiate a discovery process to search for a device that can provide a matching capability. *Id.* at 102, 116. Dr.

Madisetti explained how the source code he reviewed established that a determination is made. *Id.*

Step c) of claim 12 recites:

> **c) establishing, if said determining step identifies said need, a setup wireless connection between said service-requesting and service-providing peers;**

Motorola has satisfied this claim step.

The claim term "peer" has been construed to mean "a computer or microprocessor controlled electronic device in a peer-to-peer network." Additionally, the term "setup wireless connection" has been construed to mean "an initial wireless connection over which two peers can negotiate an addressed service connection."

The Motorola Domestic Industry Bluetooth products perform this step of claim 12. CX-712C (Madisetti WS) at 117. Once an application running on the service-requesting device (here the Droid 2) determines that a need exists for a particular service, then the device will transmit a "page" message defined by the Bluetooth Specification to the service-providing device (here the Droid X). *Id.* at 103-104, 117; CX-520 (BT Spec.) vol. 2, p. 71 & Tbl. 8.3. The two devices will then exchange several additional messages, involving necessary information for synchronization and frequency hopping, to form the setup wireless connection. CX-712C (Madisetti WS) at 103-104, 117-18; CX-520 (BT Spec.) vol. 2, p. 151 & Tbl. 8.3.

Step d) of claim 12 recites:

> **d) communicating authorization information describing said service-requesting peer to said service-providing peer;**

Motorola has satisfied this claim step.

The claim term "authorization information" has been construed to mean "information used for authorization."

The Motorola Domestic Industry Bluetooth products perform this step. CX-712C (Madisetti WS) at 118. The Bluetooth authentication procedure is based on a challenge-response scheme. *Id.* at 104-105, 118. When the service-providing peer (once again, here the Droid X) sends a challenge to the service-requesting peer, (once again, here the Droid 2), the service-requesting peer will respond to the challenge by communicating a response that contains authorization information describing a combination of the challenge, the service-requesting peer's BD_ADDR and a secret key. *Id.* at 104-105, 118-19; CX-520 (BT Spec.) vol. 2, p. 240.

Motorola has proposed that the term "authorization information" means "information used for authorization." Under this construction, the "key," which describes a combination of the challenge, the service-requesting peer's BD_ADDR and a secret key, is transmitted in the response to the security challenge and is used for authorization. CX-712C (Madisetti WS) at 104-105, 119. Microsoft's proposed construction for the term is "one or more code numbers or passwords that provide permission to use a resource." Under Microsoft's construction, the "key" is a "code number" which satisfies this construction. *Id.*

Step e) of claim 12 recites:

> **e) forming a wireless service connection between said service-requesting and service-providing peers when said service-requesting peer is authorized through an identification code;**

Motorola has satisfied this claim step.

The claim term "wireless service connection" has been construed to mean "a wireless connection over which services can be provided to peers." Additionally, the claim term "authorized through an identification code" has been construed to mean "permitted using an identification code."

The Motorola Domestic Industry Bluetooth products perform this step. CX-712C (Madisetti WS) at 119. Upon receipt of the service-requesting peer's response, the service-providing peer determines whether the response is correct. *Id.* at 104-105, 120; CX-520 (BT Spec.) vol. 2, p. 240. As explained in the server-side Java source code function listenUsingRfcommWithServiceRecord() for the Motorola Bluetooth products, the "remote device connecting to [a socket for a particular UUID] will be authenticated." CX-712C (Madisetti WS) at 120-21.

In order to determine whether the response is correct, as described above, the two devices both need to have knowledge of an identification code—the shared secret key. CX-712C (Madisetti WS) at 104-05, 121. If the response is incorrect, then no service connection will be permitted. *Id.* at 105, 121. If the response is correct, then the devices are authorized to form a service connection, provided the remaining negotiations are successful. *Id.* at 106, 121.

Motorola has proposed that the term "authorized through an identification code" means "permitted using an identification code." Under this construction, the shared secret key, in combination with other shared information, permits the service-requesting device to form a connection. CX-712C (Madisetti WS) at 121. Microsoft's proposed construction of the term is "determining, using the identification code, whether the

service-requesting peer has permission to establish a wireless service connection with the service-providing peer." One of the authentication mechanisms used by the Bluetooth Specification is the utilization of a shared secret key. Based on this secret key, the service-providing peer determines whether the service-requesting peer is authorized, and thus the limitation is met, even under Microsoft's proposed construction. *Id.* at 104-105, 122.

Step f) of claim 12 recites:

> **communicating capability information describing said service-providing peer to said service-requesting peer;**

Motorola has satisfied this claim step.

The Motorola Domestic Industry Bluetooth products perform this step. CX-712C (Madisetti WS) at 122. In response to an SDP Request message during the service discovery process, the service-providing peer will communicate an SDP Response message, which includes a list of service records, if any, that match the service request pattern. *Id.* at 106-08, 122; CX-520 (BT Spec.) vol. 3, p. 132-33. The parties have jointly proposed that the term "capabilities" should be understood to mean "functionality that a peer can perform for another peer over a service connection; capabilities do not relate to characteristics of the connection between the peers." The claim limitation is met under this construction because the "service record handles" transmitted by the service-providing peer in an SDP Response message relate to services that the service-providing peer can perform over a service connection. CX-712C (Madisetti WS) at 108, 122-23; CX-520 (BT Spec.) vol. 3, pp. 118, 122, 133-34, 138.

Step g) of claim 12 recites:

g) forming said wireless service connection between said service-requesting and service-providing peers when said service-providing peer is determined to have a capability compatible with said need determined in step b); and

Motorola has satisfied this claim step.

The claim term "wireless service connection" has been construed to mean "a wireless connection over which services can be provided to peers."

The Motorola Domestic Industry Bluetooth products perform this step. CX-712C (Madisetti WS) at 123. If the service-responding peer's SDP Response message identifies a Universally Unique Identifier (UUID) that matches the UUID needed by the service-requesting peer, then a service connection will be formed between the devices. *Id.* at 109, 123-24. When the capabilities are not matched, an exception occurs and the connection is not formed. CX-712C (Madisetti WS) at 108-109, 124; CX-520 (BT Spec.) vol. 3, p. 134.

Step h) of claim 12 recites:

h) providing said capability using said service connection.

Motorola has satisfied this claim step.

The Motorola domestic industry products perform this step. CX-712C (Madisetti WS) at 124-25. If the service discovery process completes successfully, then the service-providing peer, here the Droid X, will provide the requested capability over the service connection. *Id.* at 111, 125.

VI. U.S. Patent No. 7,162,094

U.S. Patent No. 7,162,094 ("the '094 patent") is titled, "Frequency Coefficient Scanning Paths for Coding Digital Video Content." JX-9 ('094 patent). The '094 patent issued on January 9, 2007, and the named inventors are Limin Wang, David Baylon, Krit Panusopone, Rajeev Gandhi, Yue Yu, and Ajay Luthra. *Id.* The '094 patent relates to "digital video encoding, decoding, and bitstream generation," and more specifically, relates to "scanning paths in transform-based coding as used in MPEG-4 Part 10 Advanced Video Coding/H.264, for example." *Id.* at col. 1, lns. 17-21 (Technical Field).

Motorola asserts independent apparatus claims 7, 8, and 10. The asserted claims read as follows:

> 7. A device for decoding digital video content wherein the digital video content is represented in a one dimensional array of frequency coefficients, the device comprising:
>
> a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively, to produce a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;
>
> assigning the two dimensional frequency coefficient located at n=0 and m=0 a value of the one dimensional frequency coefficient located at p=0;
>
> assigning the two dimensional frequency coefficient located at n=0 and m=1 a value of the one dimensional frequency coefficient located at p=1;
>
> assigning the two dimensional frequency coefficient located at n=1 and m=0 a value of the one dimensional frequency coefficient located at p=2;

assigning the two dimensional frequency coefficient located at n=0 and m=2 a value of the one dimensional frequency coefficient located at p=3;

assigning the two dimensional frequency coefficient located at n=0 and m=3 a value of the one dimensional frequency coefficient located at p=4;

assigning the two dimensional frequency coefficient located at n=1 and m=1 a value of the one dimensional frequency coefficient located at p=5;

assigning the two dimensional frequency coefficient located at n=1 and m=2 a value of the one dimensional frequency coefficient located at p=6;

assigning the two dimensional frequency coefficient located at n=1 and m=3 a value of the one dimensional frequency coefficient located at p=7;

assigning the two dimensional frequency coefficient located at n=2 and m=0 a value of the one dimensional frequency coefficient located at p=8;

assigning the two dimensional frequency coefficient located at n=2 and m=1 a value of the one dimensional frequency coefficient located at p=9;

assigning the two dimensional frequency coefficient located at n=2 and m=2 a value of the one dimensional frequency coefficient located at p=10;

assigning the two dimensional frequency coefficient located at n=2 and m=3 a value of the one dimensional frequency coefficient located at p=11;

assigning the two dimensional frequency coefficient located at n=3 and m=0 a value of the one dimensional frequency coefficient located at p=12;

assigning the two dimensional frequency coefficient located at n=3 and m=1 a value of the one dimensional frequency coefficient located at p=13;

assigning the two dimensional frequency coefficient located at n=3 and m=2 a value of the one dimensional frequency coefficient located at p=14; and

assigning the two dimensional frequency coefficient located at n=3 and m=3 a value of the one dimensional frequency coefficient located at p=15.

8. A device for decoding digital video content wherein the digital video content is represented in a one dimensional array of frequency coefficients, wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15, the device comprising:

a generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;

assigning the two dimensional frequency coefficient located at n=0 and m=0 a value of the one dimensional frequency coefficient located at p=0;

assigning the two dimensional frequency coefficient located at n=0 and m=1 a value of the one dimensional frequency coefficient located at p=1;

assigning the two dimensional frequency coefficient located at n=1 and m=0 a value of the one dimensional frequency coefficient located at p=2;

assigning the two dimensional frequency coefficient located at n=0 and m=2 a value of the one dimensional frequency coefficient located at p=3;

assigning the two dimensional frequency coefficient located at n=0 and m=3 a value of the one dimensional frequency coefficient located at p=4;

assigning the two dimensional frequency coefficient located at n=1 and m=1 a value of the one dimensional frequency coefficient located at p=5;

assigning the two dimensional frequency coefficient located at n=1 and m=2 a value of the one dimensional frequency coefficient located at p=6;

assigning the two dimensional frequency coefficient located at n=1 and m=3 a value of the one dimensional frequency coefficient located at p=7;

assigning the two dimensional frequency coefficient located at n=2 and m=0 a value of the one dimensional frequency coefficient located at p=8;

assigning the two dimensional frequency coefficient located at n=2 and m=1 a value of the one dimensional frequency coefficient located at p=9;

assigning the two dimensional frequency coefficient located at n=2 and m=2 a value of the one dimensional frequency coefficient located at p=10;

assigning the two dimensional frequency coefficient located at n=2 and m=3 a value of the one dimensional frequency coefficient located at p=11;

assigning the two dimensional frequency coefficient located at n=3 and m=0 a value of the one dimensional frequency coefficient located at p=12;

assigning the two dimensional frequency coefficient located at n=3 and m=1 a value of the one dimensional frequency coefficient located at p=13;

assigning the two dimensional frequency coefficient located at n=3 and m=2 a value of the one dimensional frequency coefficient located at p=14; and

assigning the two dimensional frequency coefficient located at n=3 and m=3 a value of the one dimensional frequency coefficient located at p=15.

10. A computer readable medium encoded with a computer program used to control a video processor that receives a first signal wherein the first signal is represented in a one dimensional array of frequency coefficients wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15, the computer readable medium controlling the video processor in a method comprising:

generating a two dimensional array of frequency coefficients from the one dimensional array of frequency coefficients, wherein the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;

assigning the two dimensional frequency coefficient located at n=0 and m=0 a value of the one dimensional frequency coefficient located at p=0;

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assigning the two dimensional frequency coefficient located at n=0 and m=1 a value of the one dimensional frequency coefficient located at p=1;

assigning the two dimensional frequency coefficient located at n=1 and m=0 a value of the one dimensional frequency coefficient located at p=2;

assigning the two dimensional frequency coefficient located at n=0 and m=2 a value of the one dimensional frequency coefficient located at p=3;

assigning the two dimensional frequency coefficient located at n=0 and m=3 a value of the one dimensional frequency coefficient located at p=4;

assigning the two dimensional frequency coefficient located at n=1 and m=1 a value of the one dimensional frequency coefficient located at p=5;

assigning the two dimensional frequency coefficient located at n=1 and m=2 a value of the one dimensional frequency coefficient located at p=6;

assigning the two dimensional frequency coefficient located at n=1 and m=3 a value of the one dimensional frequency coefficient located at p=7;

assigning the two dimensional frequency coefficient located at n=2 and m=0 a value of the one dimensional frequency coefficient located at p=8;

assigning the two dimensional frequency coefficient located at n=2 and m=1 a value of the one dimensional frequency coefficient located at p=9;

assigning the two dimensional frequency coefficient located at n=2 and m=2 a value of the one dimensional frequency coefficient located at p=10;

assigning the two dimensional frequency coefficient located at n=2 and m=3 a value of the one dimensional frequency coefficient located at p=11;

assigning the two dimensional frequency coefficient located at n=3 and m=0 a value of the one dimensional frequency coefficient located at p=12;

assigning the two dimensional frequency coefficient located at n=3 and m=1 a value of the one dimensional frequency coefficient located at p=13;

> assigning the two dimensional frequency coefficient located at n=3 and m=2 a value of the one dimensional frequency coefficient located at p=14; and
>
> assigning the two dimensional frequency coefficient located at n=3 and m=3 a value of the one dimensional frequency coefficient located at p=15.

JX-9 at col. 17, ln. 44 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.

A. Claim Construction[48]

1. "one dimensional array" (claims 7, 8, 10); "one dimensional array of frequency coefficients" (claims 7, 8, 10)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"one dimensional array" (claims 7, 8, 10)	a set of items arranged in a single column or row	a linear, numbered collection of variables all of the same type where each variable, or cell, in the array has an index, and the cells in an array are numbered consecutively and indexed starting with 0 and going to N-1 where N is the length of the array
"one dimensional array of frequency coefficients" (claims 7, 8, 10)	a set of frequency coefficients arranged in a single column or row	a linear, numbered collection of frequency coefficients where each cell in the array has an index, and the cells in an array are numbered consecutively and indexed starting with 0 and going to N-1 where N is the length of the array

The claim term "one dimensional array" appears in the preamble and the first element of claim 7; the preamble of claim 8; and the preamble and the first element of claim 10. JX-9 at col. 17, ln. 44 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.[49]

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[48] A person of ordinary skill in the art of the '094 patent in 2002 would have had at least a bachelor's degree in electrical or computer engineering or the equivalent, and at least three years of work experience in the field of video processing, or at least a master's degree in electrical or computer engineering or the equivalent, and at least one year of work experience in the field of video processing. CX-706C (Drabik WS) at 7.

[49] The claim term also appears in non-asserted claims. JX-9.

Motorola construes the term to mean "a set of items arranged in a single column or row." Compls. Br. at 68; RX-394 (Joint Identification of Claim Terms and Proposed Constructions) at 4. Microsoft construes the term to mean "a linear, numbered collection of variables all of the same type where each variable, or cell, in the array has an index, and the cells in an array are numbered consecutively and indexed starting with 0 and going to N-1 where N is the length of the array." RX-394 at 4.

As proposed by Motorola, the claim term "one dimensional array" is construed to mean "a set of items arranged in a single column or row."

The claim term "one dimensional array of frequency coefficients" appears in the preamble and the first element of claim 7; the preamble of claim 8; and the preamble and the first element of claim 10. JX-9 at col. 17, ln. 44 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.[50]

Motorola construes the term to mean "a set of frequency coefficients arranged in a single column or row." Compls. Br. at 68. Microsoft construes the term to mean "a linear, numbered collection of frequency coefficients where each cell in the array has an index, and the cells in an array are numbered consecutively and indexed starting with 0 and going to N-1 where N is the length of the array." Resp. Br. at 195; RX-394 at 4.

As proposed by Motorola, the claim term "one dimensional array of frequency coefficients" is construed to mean "a set of frequency coefficients arranged in a single column or row."

The parties dispute whether the term "one dimensional array" (also "1-D array") should be limited to a particular form of data structure used in computer programming, as

[50] The claim term also appears in non-asserted claims. JX-9.

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proposed by Microsoft.

The Background section of the '094 patent states:

> Transform domain coding is used to remove spatial redundancy within each picture or temporally predicted residual picture. A residual picture is the difference between a picture and a picture that is temporally predicted from that picture. Each picture or temporally predicted residual picture comprises a number of blocks of pixels. Each block refers to an N by M group of pixels where N refers to the number of columns of pixels in the block and M refers to the number of rows of pixels in the block. Each block in the picture or temporally predicted residual picture is represented by an N by M array of luminance and chrominance coefficients which correspond to each pixel in the blocks' N by M grid of pixels. Each luminance coefficient represents the brightness level, or luminance, of its corresponding pixel. Each block in the picture or temporally predicted residual picture is also represented by an N by M array of chrominance coefficients which correspond to each pixel in the blocks' N by M grid of pixels. Each chrominance coefficient represents the color content, or chrominance, of its corresponding pixel. The term "picture" will be used hereafter and in the appended claims, unless otherwise specifically denoted, to mean either a picture or a temporally predicted residual picture.
>
> * * *
>
> Transform domain coding takes advantage of the fact that most of the energy of a signal containing the digital video content lies at low frequencies. Transform domain coding transforms the luminance coefficients in each N by M array from the spatial domain to the frequency domain. The transformed N by M array comprises coefficients which represent energy levels in the frequency domain. As used hereafter and in the appended claims, unless otherwise denoted, the coefficients of the transformed N by M array will be referred to as "frequency coefficients." Once the luminance coefficients have been transformed into frequency coefficients, various compression techniques can then be performed on the contents of picture in the frequency domain that would otherwise be impossible to

> perform in the spatial domain.
>
> The N by M array of frequency coefficients is two dimensional and must be converted into a one dimensional array of frequency coefficients so that the encoder or decoder can use the frequency coefficients to encode or decode the picture. The encoder generates the one dimensional array of frequency coefficients by scanning the two dimensional array of frequency coefficients using a particular scanning path. The scanning path refers to the order in which the frequency coefficients in the two dimensional array are scanned and output by the encoder into the one dimensional array.
>
> *****
>
> It is preferable for the encoder to first scan the high-energy low frequency coefficients and then scan the low-energy high frequency coefficients. Scanning the low frequency coefficients before the high frequency coefficients places the low frequency coefficients before the high frequency coefficients in the resulting one dimensional array of coefficients. This particular order allows efficient coding and compression of the picture.

JX-9 at col. 2, ln. 51 – col. 4, ln. 10 (emphases added).

The specification portion cited above explains that in "an N by M group of pixels," N refers to "the number of columns" of pixels, and M refers to "the number of rows" of pixels. Thus, as disclosed in the Background section of the '094 patent, a person of ordinary skill in the art would understand that the claim term "one dimensional array" is simply referring to one dimensional ordering of items (*i.e.*, a set of items arranged in a single column or row).

The term "one dimensional array" is understood similarly in the H.264 Standard, which incorporates the scan pattern claimed in the '094 patent, and generally in the field of mathematics. Drabik Tr. 450. Specifically, the H.264 Standard states: "A one

dimensional array is referred to as a list." *See* CX-29 at 17. It further describes the input to the inverse scanning process as a "list of 16 values." *Id.* at 179-80; Drabik Tr. 630. And the term "array" is understood in mathematics and in general usage to be an arrangement of quantities or collection of numbers. *See, e.g.*, CX-785 at 78-79; Mitzenmacher Tr. 1670.

The positions, or sequence, of the items in the one dimensional array can be represented by a mathematical variable (such as the claimed p=0-15) to indicate order in the set, but the array need not have an index associated with an element of storage memory. Drabik Tr. 447-448. A person of ordinary skill would thus understand the term "one dimensional array," as used in the '094 patent, to mean a set of values arranged in a single dimension—*i.e.*, in a single column or row. Drabik Tr. 447.

Microsoft argues that the claim term "one dimensional array" must be construed as a specific data structure having certain characteristics—such as numbering, cells, indexing, type and length. Microsoft relies on extrinsic evidence RX-227, a book titled "Data Structures and Algorithms in Java." This book describes an array as follows:

> An ***array*** is a numbered collection of variables all of the same type. Each variable, or ***cell***, in an array has an ***index***, and the cells in an array are numbered consecutively starting with 0 and going to $N - 1$, where N is the ***length*** of the array, which is also known as its **capacity**. Any index not in the range from 0 to $N - 1$ is said to be ***out of bounds***.

RX-227 at 32 (emphases in original).

However, these characteristics are not required by the '094 patent. Indeed, neither the word "index" nor the concept of an indexing data structure is found in the '094 patent. As indicated above, the term "one dimensional array" simply connotes a set

of values arranged in a single column or row.

Further, Dr. Mitzenmacher ultimately agreed that (1) the '094 patent's statement of the technical field of the invention does not mention computer programming or data structures;

(2) the 094 patent's discussion of what was needed in the art is not limited to encoders or decoders designed using any particular programming language; and (3) video compression discussed in the '094 patent includes hardware implementations, and is not limited to general-purpose processing devices programmed with software. Mitzenmacher Tr. 1651-53, 1752-53. Indeed, Microsoft's expert could not identify any mention of a programming language in the '094 patent. Mitzenmacher Tr. 1652-54.

Moreover, nothing in the claim language or description of the '094 patent excludes decoder implementations that use hard-wired logic—and not a computer program—to implement inverse scanning. Nothing in the claim language or description of the '094 patent requires that the coefficients of a one dimensional array be stored in or accessed from computer memory using data structures defined by high-level programming languages like C++, C or Java. Indeed, the H.264 decoder in the Sigma Designs system-on-chip in the VIP12XX (discussed below) is a hardware design.

2. "two dimensional array" (claims 7, 8, 10); "two dimensional array of frequency coefficients" (claims 7, 8, 10)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction

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"two dimensional array" (claims 7, 8, 10)	a set of items arranged in rows and columns	a two-dimensional, numbered collection of variables all of the same type where each variable, or cell, in the array has a pair of indexes, with the first index commonly referring to the row and the second index to the column of the cell and with one index numbered consecutively starting with 0 and going to N-1, where N is the length of the rows and the other index numbered consecutively starting with 0 and going to M-1, where M is the length of the columns
"two dimensional array of frequency coefficients" (claims 7, 8, 10)	a set of frequency coefficients arranged in rows and columns	a two-dimensional, numbered collection of frequency coefficients where each cell in the array has a pair of indexes, with the first index commonly referring to the row and the second index to the column of the cell and with one index numbered consecutively starting with 0 and going to N-1, where N is the length of the rows and the other index numbered consecutively starting with 0 and going to M-1, where M is the length of the columns

The claim term "two dimensional array" appears in the first element of claims 7, 8, and 10. JX-9 at col. 17, ln. 44 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.[51]

Motorola construes the term to mean "a set of items arranged in rows and columns." Compls. Br. at 71. Microsoft construes the term to mean "a two-dimensional, numbered collection of variables all of the same type where each variable, or cell, in the array has a pair of indexes, with the first index commonly referring to the row and the second index to the column of the cell and with one index numbered consecutively starting with 0 and going to N-1, where N is the length of the rows and the other index numbered consecutively starting with 0 and going to M-1, where M is the length of the columns." RX-394 at 5.

[51] The claim term also appears in non-asserted claims. JX-9.

As proposed by Motorola, the claim term "two dimensional array" is construed to mean "a set of items arranged in rows and columns."

The claim term "two dimensional array of frequency coefficients" appears in the first element of claims 7, 8, and 10. JX-9 at col. 17, ln. 44 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.[52]

Motorola construes the term to mean "a set of frequency coefficients arranged in rows and columns." Compls. Br. at 71. Microsoft construes the term to mean "a two-dimensional, numbered collection of frequency coefficients where each cell in the array has a pair of indexes, with the first index commonly referring to the row and the second index to the column of the cell and with one index numbered consecutively starting with 0 and going to N-1, where N is the length of the rows and the other index numbered consecutively starting with 0 and going to M-1, where M is the length of the columns." RX-394 at 6.

As proposed by Motorola, the claim term "two dimensional array of frequency coefficients" is construed to mean "a set of frequency coefficients arranged in rows and columns."

The '094 patent refers to a two-dimensional (also "2-D") array as having columns and rows. JX-9 at col. 3, lns. 41-51. In the two-dimensional array, each item (frequency coefficient) has defined relationships in two-dimensions: to its neighbors in the same column and to its neighbors in the same row. The dimensionality of the array is derived from the relationships among its elements. CX-706C (Drabik WS) at 71-74; Drabik Tr. 620-27.

[52] The claim term also appears in non-asserted claims. JX-9.

The relationships among the elements of a 2-D array can be represented with columns and rows and two variables. The '094 patent uses variables labeled "n" and "m" to identify the relative locations of frequency coefficients in an array corresponding to a block of pixels. The variables n and m simply represent column and row numbers, respectively. JX-9 at col. 8, ln. 57-col. 9, ln. 5. The row and column numbers provide a reference for listing scanning order numbers and corresponding locations in 2-D space. JX-9 at col. 9, lns. 12-43. *See also* CX-29 180 at Table 8-13.

Microsoft agrees that the items in a 2-D array are arranged in rows and columns. However, as with the claim term "one dimensional array," Microsoft's proposed construction for "two dimensional array" adds additional requirements about numbering, cells, indexing, type and length that are based on extrinsic evidence of how the information in a 2-D array is stored and accessed in some computer languages.

Digital video content can be "represented" in a 2-D array, as required by the '094 patent claims, without being accessed or stored in the restrictive fashion required by Microsoft's proposed construction. Regardless of whether one accesses the elements of a two-dimensional array in a computer program with one index or two indices, the positions of all of the elements of the array are specified relative to one another in two dimensions, and are represented in columns and rows, each represented by a variable. This is different than a one-dimensional array, in which the elements relate to one another only in one dimension.

3. "wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" (claims 8, 10)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" (claims 8, 10)	the position of a frequency coefficient in the one dimensional array is represented by a variable p that can be 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15	the "one dimensional array of frequency coefficients" has values at locations identified by a variable p set to each number from 0 to 15, inclusive

The claim term "wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" appears in the preamble of claims 8 and 10. JX-9 at col. 18, ln. 37 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.[53]

Motorola construes the term to mean "the position of a frequency coefficient in the one dimensional array is represented by a variable p that can be 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15." Compls. Br. at 73. Microsoft construes the term to mean "the 'one dimensional array of frequency coefficients' has values at locations identified by a variable p set to each number from 0 to 15, inclusive." RX-394 at 6.

As proposed by Motorola, the claim term "wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" is construed to mean "the position of a frequency coefficient in the one dimensional array is represented by a variable p that can be 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15."

[53] The claim term also appears in non-asserted claims. JX-9.

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The dispute over this language is an extension of the dispute over whether one-dimensional array should be defined as a fixed size (*i.e.*, 16 memory cells) structure for storing and accessing data in computer memory, with each array element having a storage location accessible by a sequential index.

First, the plain language of the claim shows that the one dimensional array of frequency coefficients is represented by one of the 16 "p" variables. The "represented by" language of the claim is indeed broader than Microsoft's proposed language "has values at locations identified by," which requires physical locations in a "one dimensional array."

A person of ordinary skill in the art would understand that the variable "p" refers to the position of a frequency coefficient in the claimed 1-D array. Specifically, the claims of the '094 patent refer to a "one dimensional frequency coefficient" as "being located at p=[]." This is the position of the frequency coefficient in the 1-D sequence that results from the scanning order used during encoding. *See* JX-9 at col. 9, lns. 22-42 (Table 2).

Microsoft's proposed construction imposes requirements on how the claimed 1-D array is stored, such as that a fixed space or fixed number of entries in memory must be present. In particular, Microsoft argues that the locations to which variable p refers must be 16 memory locations. As indicated above, the plain language of the claim only requires that the one dimensional array of frequency coefficients be represented by one of the 16 "p" variables.

Consistent with the claim language, the '094 patent simply refers to the numbers 0-15 in FIG. 6 as labels based on the order of coefficients in a scanning path. JX-9 at col.

9, lns. 12-22. This order is preserved when the coefficients in the 1-D array are encoded using run-level coding to eliminate the processor and memory inefficiencies that otherwise might be caused by storing frequency values that are zero. JX-9 at col. 8, lns. 26-37.[54] Encoding the coefficients of the 1-D array into a sequence of run-level pairs (or position-level pairs) does not change or eliminate the locations of any of the coefficients in the 1-D array, whether the value of the coefficient is zero or non-zero, stored or not stored.

4. "scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" (claim 7)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" (claim 7)	maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively	iterates through the one dimensional array of frequency coefficients from a position in the array represented by p=0 and continuing through consecutive positions up to p=15

The claim term "scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" appears in the first element of claim 7. JX-9 at col. 17, ln. 44 – col. 18, ln. 36.

Motorola construes the term to mean "maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively." Compls. Br. at 74. Microsoft construes the term to mean "iterates

[54] As explained in the '094 patent, "run-level" pairs are an encoding of the frequency coefficients of a 1-D array into pairs of non-zero frequency coefficient values and the numbers of zeroes between them. *Id.*

through the one dimensional array of frequency coefficients from a position in the array represented by p=0 and continuing through consecutive positions up to p=15." RX-394 at 7.

As proposed by Motorola, the claim term "scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" is construed to mean "maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively."

Again, the dispute over this language is an extension of the dispute about whether a 1-D array should be defined as a fixed size structure for storing and accessing data in computer memory.

The word "scans" is used in claim 7 to refer to the conversion between a 1-D array and a 2-D array. This conversion is a mapping function, as demonstrated by the subsequent elements of the claims assigning values to locations in the 2-D array based on the positions of those values in the 1-D array. CX-706C (Drabik WS) at 79-80. Accordingly, Motorola proposes to construe "scans" as "maps."

Motorola's construction is supported by the specification of the '094 patent. In the encoding context (decoding would be the inverse), the specification discloses examples wherein scanning defines the relationship (i.e., the mapping) between a 1-D and 2-D array. JX-9 at col. 3, lns. 45-51, col. 4, lns. 3-10. Furthermore, documents relating to the H.264 Standard, which is incorporated by reference, explicitly equate scanning with mapping. The H.264 Standard itself states: "This subclause specifies

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inverse scanning processes; *i.e.*, the mapping of indices to locations...." CX-29 at 25.[55] The H.264/AVC Drafting Guide (v9) also defines "scan" as "mapping." CX-178C at MOTM_ITC 0179257 ("A scan is a mapping from 2-D to 1-D. An inverse scan is a mapping from 1-D to 2-D.").[56]

Microsoft's proposed construction is inappropriate because it limits scanning to a particular computational technique of storing each element of the 1-D array, including coefficients that are zero, in memory and accessing that memory once for each of the elements in the array. The '094 patent does not require an array having a fixed space in computer memory, *e.g.*, an array can be specified using run-level pairs. JX-9 at col. 8, lns. 28-37.

5. "assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" (claims 7, 8, 10); a value of the one dimensional frequency coefficient located at p=[ ]" (claims 7, 8, 10)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction

[55] Microsoft argues that it is improper to base claim construction on the H.264 Standard, on the theory that a claim cannot be construed by relying on an accused device as extrinsic evidence. Here, however, the '094 patent points to the H.264 Standard as providing context for the claimed inventions.

[56] *See also* Joint Final Committee Draft of H.264 Standard, CX-137 at 4 ("raster scan" is a "[a] mapping of a rectangular two-dimensional pattern to a one-dimensional pattern....").

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"assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" (claims 7, 8, 10)	setting the value of the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] to the value of the frequency coefficient located at position p=[0-15]	copying the coefficient value located in the one dimensional frequency array located at position [0-15] to the two dimensional array at location n=[0-3] and m=[0-3]
"a value of the one dimensional frequency coefficient located at p=[ ]" (claims 7, 8, 10)	a value of the frequency coefficient located at a position p in the one dimensional array	the frequency coefficient stored in the "one dimensional array of frequency coefficients" at the [0-15th] location

The claim term "assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" appears in the second through the seventeenth elements of claims 7, 8, and 10. JX-9 at col. 17, ln. 44 – col. 19, ln. 31; col. 20, ln. 31 – col. 22, ln. 13.[57]

Motorola construes the term to mean "setting the value of the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] to the value of the frequency coefficient located at position p=[0-15]." Compls. Br. at 76. Microsoft construes the term to mean "copying the coefficient value located in the one dimensional frequency array located at position [0-15] to the two dimensional array at location n=[0-3] and m=[0-3]." RX-394 at 7.

As proposed by Motorola, the claim term "assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" is construed to mean "setting the value of the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] to the value of the

[57] The claim term also appears in non-asserted method claims 5 and 6. JX-9.

frequency coefficient located at position p=[0-15]."

This dispute is yet another extension of the dispute about whether a 1-D array should be defined as a fixed size structure for storing and accessing data. This time Microsoft seeks to require that every coefficient in the one-dimensional array must be accessed from computer memory and copied into a new memory location.

The disputed term "assign" has various ordinary meanings depending on context. When used in the context of a value and a location in an array, as in the claims, a person of ordinary skill in the art would understand "assigning" to take on the ordinary meaning of fixing or specifying the correspondence or relationship between the value and the location. CX-706C (Drabik WS) at 81-82. This meaning is supported by Table 2 of the '094 patent, which "lists the frequency coefficient scanning order and the corresponding values for n and m." JX-9 at col. 9, lns. 21-22. Indeed, there is nothing in the '094 patent that suggests using the term "assigning" in a way that is different from its ordinary meaning.

There are various ways in which a value of a location in an array can be set, and the '094 patent specification does not specify that a particular computational implementation be used. The '094 patent invention relates instead to the scanning path that creates the one-to-one correspondence between the values of a one-dimensional array and a two-dimensional array.

Microsoft's proposed construction erroneously limits assigning to "copying." Copying is only one way of assigning values to locations of an array. Thus, "assigning" may include copying, but does not require copying. The extrinsic definitions cited by Microsoft ("assignment operator," "assignment statement") are computer programming

terms not used in the '094 patent, and even they do not mention copying. RRX-7C (Mitzenmacher RWS) at 104-05. A value can be assigned by default or through computation — it does not have to be copied. Mitzenmacher Tr. 1695. Further, the '094 patent does not require an array having a fixed space in memory. For example, an array can be specified without storing all elements by using run-level pairs. JX-9 at col. 8, lns. 28-37.

The parties also dispute the meaning of the claim term "a value of the one dimensional frequency coefficient located at p=[ ]," which is a portion of the longer term construed above.

Motorola construes this term to mean "a value of the frequency coefficient located at a position p in the one dimensional array." Compls. Br. at 77. Microsoft construes the term to mean "the frequency coefficient stored in the "one dimensional array of frequency coefficients" at the [0-15th] location." RX-394 at 7.

As proposed by Motorola, the claim term "a value of the one dimensional frequency coefficient located at p=[ ]" is construed to mean "a value of the frequency coefficient located at a position p in the one dimensional array," based on the plain meaning of the claim language.

As indicated above, Microsoft's proposed construction is too narrow because it imposes a particular implementation based on storing all of the frequency coefficients of an array, including zero values. The '094 patent does not require an array having a fixed space in computer memory.

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6. "generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients" (claim 8)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients" (claim 8)	portion of the decoder that produces a representation of the digital video content in a two dimensional array of frequency coefficients	*This term is invalid and not subject to construction*

The claim term "generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients" appears in the first element of claim 8. JX-9 at col. 18, ln. 37 – col. 19, ln. 31.

Motorola construes the term to mean "portion of the decoder that produces a representation of the digital video content in a two dimensional array of frequency coefficients." Compls. Br. at 78. Microsoft argues that this term is invalid and not subject to construction. RX-394 at 8.

As proposed by Motorola, the claim term "generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients" is construed to mean "portion of the decoder that produces a representation of the digital video content in a two dimensional array of frequency coefficients."

Motorola's proposed construction is supported by the specification of the '094 patent. JX-9 at col. 3, lns. 45-48 ("The encoder generates the one dimensional array..."). In addition, FIG. 5 depicts an embodiment of transform domain coding in which block 502 converts quantized frequency coefficients from a two-dimensional array to a one-dimensional array. JX-9 at col. 8, lns. 20-23.

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In the context of a decoder, a portion of the decoder corresponding to block 502 generates the two-dimensional array of frequency coefficients. For the decoding operations, the arrows of FIG. 5 are reversed, *i.e.*, the decoding operations proceed in reverse order from right to left—entropy decoding, inverse scan, inverse quantization, and inverse transform. That a decoder reverses the operations of the encoder was well understood in the art, and did not need to be explained in the '094 patent. CX-719C (Drabik RWS) at 106-08. For example, the prior art Puri patent (CX-125) cited by the Examiner during prosecution of the '094 patent illustrates and confirms this known principle. *See, e.g.*, FIGS. 2 and 4 of CX-125, which show an encoder and decoder, respectively, and the accompanying description, which provides *inter alia* that the decoder "reverses the operations performed by the transform encoder." CX-125 at col. 2, ln. 45 – col. 3, ln. 57. Accordingly, the explanation of the encoding operations in the '094 patent specified the decoding operations as well.

In the art of video coding, the word "generator" describes structure. The structure it describes is electronic hardware, which can be a circuit designed to perform a particular function or a programmable device programmed with firmware or software to perform the function, such as a CPU. Drabik Tr. 478. Normally, the function of the "generator" is specified by other language, as is the case here, where the term provides that the claimed generator "produces a representation of the digital video content in a two dimensional array of frequency coefficients . . ." An example of prior use of the word "generator" to refer to structure in a video coding context can be seen in the cited prior art reference U.S. Patent No. 5,504,530 (Obikane). Obikane disclosed a coding apparatus including an "EOB generator." CX-115, FIGS. 1(c) and 18(c), and col. 23, lns. 61-63.

7. "a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" (claim 7)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" (claim 7)	portion of the decoder that maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively	*This term is invalid and not subject to construction*

The claim term "a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" appears in the first element of claim 7. JX-9 at col. 17, ln. 44 – col. 18, ln. 36.

Motorola construes the term to mean "portion of the decoder that maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively." Compls. Br. at 79. Microsoft argues that this term is invalid and not subject to construction. RX-394 at 8.

As proposed by Motorola, the claim term "a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" is construed to mean "portion of the decoder that maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively."

As discussed with respect to construction of "scans" above, the scan pattern of FIG. 6 described in the '094 patent applies equally to the encoder and the decoder. JX-9 at col. 3, lns. 40-51. Reversal of the scanning operation for decoding was well

understood in the art, as discussed above. Accordingly, the explanation of the encoding operations in the '094 patent specified the decoding operations as well.

As with the word "generator," the word "scanner" describes a structure. The structure it describes is electronic hardware, which can be a circuit designed to perform a particular function or a programmable device programmed with firmware or software to perform the function, such as a CPU. Drabik Tr. 479-480. Normally, the function of the "scanner" is specified by other language, as is the case here, where the claim provides inter alia that the claimed scanner "scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively." Examples of prior use of the word "scanner" to refer to structure in a video coding context can be seen in U.S. Patent 5,500,678 (Puri), CX-125 at col. 10, lns. 41-49, col. 12, lns. 12-16; U.S. Patent No. 5,949,912 (Wu), CX-128, FIG. 1, at col. 3, lns. 8-10; and U.S. Patent 7,813,569 (Ahn et al), CX-816, FIG. 2, at col. 2, lns. 21-41.

B. Infringement Analysis of the '094 Patent

Microsoft argues that it does not directly infringe the '094 patent based on its testing of the Xbox with certain test video clips. Microsoft asserts that Motorola failed to show that Microsoft's test clips possessed the properties necessary to invoke the accused functionality in the allegedly infringing manner and so its evidence of direct infringement is insufficient. Resp. Br. at 177-78.

Microsoft's argument that there is no evidence that its test clips processed 16 non-zero coefficients is irrelevant. The asserted apparatus claims are not limited to a device that scans 16 non-zero coefficients. Also, all that must be shown for infringement is that the Xbox has the claimed structural capabilities of the '094 apparatus claims. *See*

Mitzenmacher Tr. 1692-1693. Microsoft's argument is rejected.

Microsoft also argues that Motorola improperly relies on the H.264 specification (CX-29) as evidence of infringement. Resp. Br. at 178. Microsoft argues that use of the H.264 Standard as evidence is improper because it only prescribes inputs and outputs. *Id.* However, the Standard requires that "[e]ach profile specifies a subset of algorithmic features and limits that *shall be supported by all decoders conforming to that profile*. CX-29 at 286 (emphasis added). Microsoft does not deny that they practice the H.264 Standard and that the Standard requires this.

1. Accused Products

Motorola argues that least the following products are accused products: all versions and configurations of the Microsoft Xbox 360 console ("the Xbox") imported into the United States and/or sold after importation into the United States on or after December 17, 2010, including but not limited to the Xbox 360 4GB Console and the Xbox 360 250GB Console. Compls. Br. at 80.

Microsoft does not dispute this.

2. Direct Infringement

For the reasons set forth below, Motorola has shown that Microsoft's accused products directly infringe all asserted claims of the '094 patent.

Claim 8

The preamble of independent apparatus claim 8 recites:

> **A device for decoding digital video content wherein the digital video content is represented in a one dimensional array of frequency coefficients, wherein the one dimensional array of frequency coefficients is**

represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15, the device comprising:

Motorola has established that this claim limitation is satisfied.

The claim term "one dimensional array" has been construed to mean "a set of items arranged in a single column or row." The claim term "one dimensional array of frequency coefficients" has been construed to mean "a set of frequency coefficients arranged in a single column or row."

The claim term "wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" has been construed to mean "the position of a frequency coefficient in the one dimensional array is represented by a variable p that can be 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15."

The H.264 Standard specifies an inverse scanning process for 4 4 transform coefficients, where the input is a 1-D array. CX-29 at 179 ("Input to this process is a list of 16 values."). In the Microsoft code, this 1-D array is stored in a [ ] CX-284C at MS_MOTO_752_0000980729; Mitzenmacher Tr. 1691. [ ] CX-706C (Drabik WS) at 95-103, 109, 204-210; Mitzenmacher Tr. 1692.

Microsoft argues that [ ] which Microsoft refers to as [ ] is not the claimed "one dimensional array." This is not correct. As explained above in the claim construction section, the '094 patent is not limited to an "array" in the context of computer science or a particular programming language. A

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[ ] is one way to implement a 1-D array. The [

] are the positions *in a 1-D array*.

Microsoft also argues that the Xbox does not have the claimed variable "p."

[

] a level value for each of positions p=0...15. CX-706C (Drabik WS) at 112. Moreover, although the claim does not require 16 nonzero values, Dr. Mitzenmacher admitted that the [

] Mitzenmacher Tr. 1692. When [ ] pairs, [

] will explicitly take on every value from 0 to 15.

The first element of claim 8 recites:

> **a generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;**

Motorola has established that this claim limitation is satisfied.

The claim term "generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients" has been construed to mean "portion of the decoder that produces a representation of the digital video content in a two dimensional array of frequency coefficients."

The Xbox includes a generator, which is the portion of the H.264 video decoder software running on the XCGPU that produces a representation of the digital video content in a 2-D array according to the claim language. CX-706C (Drabik WS) at 103-110, 204-210; Drabik Tr. 478-479. In the Xbox, the 2-D array of the claim is contained

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in [ ] Drabik Tr. 641; CDX-4C-22. Mathematically,[ ] Drabik Tr. 648-649.

The H.264 Standard specifies that the output of the inverse field scan for 4 4 transform coefficients is a variable containing a 2-D array. CX-29 at 179 ("Output of this process is a variable *c* containing a two-dimensional array of 4x4 values"). Microsoft's corporate representative, Yongjun Wu, confirmed that, in the Xbox, the output of the inverse scan is a 2-D array. CX-646C (Wu Dep. Tr.) at 66.[58]

> Q. In the example we were discussing after the
> inverse scan pattern is applied, what type of data structure
> is the output placed into?
> A. The output sign?
> Q. The output of the scan pattern.
> A. That is 2-D array.

The Microsoft source code also confirms that a 2-D array stored in [ ] is generated from the 1-D array described above. In the Xbox, this happens in [ ] CX-284C at MS_MOTO_752_0000980729; Drabik Tr. 509. The first time the [ ] representing [ ] CX-706C (Drabik WS) at 107. [ ] For [

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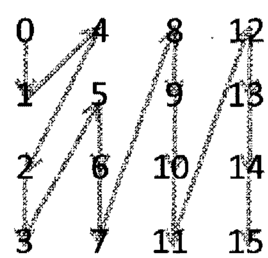
[58] Mr. Wu changed his answer six weeks after the deposition. His new answer was [ ] CX-646C (Wu Dep. Tr. Errata). The [ ] that Mr. Wu *refers to are the "m" and "n" of the claims – the row index and the column index.* Significantly, Mr. Wu did not change his answer from "2-D array" to [ ] until his rebuttal testimony. RRX-11C (Wu) at 5.

] *Id.* at 108. [ ] specifies the use of the inverse field scan of the H.264 Standard. *Id.* [ ] is a location in the 2-D array obtained by mapping with the inverse field scan (using [ ] from the [ ] Mitzenmacher Tr. 1693. Then, the 2-D coefficient value at [ ] CX-706C (Drabik WS) at 107-109.

The inverse field scan is implemented [ ] (below, left). CX-256C at MS-MOTO_752_00000967246. Mitzenmacher Tr. 1685. [ ] RRX-7C (Mitzenmacher RWS) at 133. The highlighted portion of [ ] which follows the same pattern as the inverse field scan illustrated in Figure 8-8(b) of the H.264 Standard (below, right):



See CX-706C (Drabik WS) at 103-106. This scan pattern is the same as in FIG. 6 of the '094 patent. CDX-4C-3 to 15. [ ] is the claimed "generator." CX-706C (Drabik WS) at 103-106.

Microsoft argues that the Xbox does not have a "two dimensional array" because [ ] However, the dimensionality of an array is not determined by the number of indices used in the source code. Dr. Mitzenmacher admitted that programming languages like MATLAB allow accessing data in a 2-D array [ ] RRX-7C (Mitzenmacher RWS) at 23.

Microsoft also argues that Motorola failed to identify anything in the Xbox source code that corresponds to the "n" and "m" of the claim. This is not correct. As Dr. Drabik explained, [ ] is the n, m variable pair of the claim [ ] Drabik Tr. 526; CX-706C (Drabik WS) at 107-108. [ ] Microsoft contends that [ ] However, variable "n=0, 1, 2, or 3" and "m=0, 1, 2, or 3" are not physical structural elements. Instead, they are symbols representative of location in 2-D space (i.e., the columns and rows in the graphically depicted 2-D space of Figure 6 of the '094 patent). Drabik Tr. 473-475, 527. Furthermore, the variables are not separate – they are recited as pairs in the "assigning" limitations of the claims.[59]

[59] Thus, the variables "n" and "m" are not like the mechanical elements at issue in the *Becton, Dickinson* and *Engel Indus.* cases relied upon by Microsoft. *See* Resp. Br. at 204 (citing *Becton, Dickinson & Co. v. Tyco Healthcare Group, LP*, 616 F.3d 1249, 1254 (Fed. Cir. 2010); *Engel Indus., Inc. v. Lockformer Co.*, 96 F.3d 1398, 1404-05 (Fed. Cir. 1996)).

Microsoft further argues that the Xbox does not have a "generator" because the [ ] However, as discussed above, Dr. Drabik did not identify [ ] alone as the claimed "generator." He also cited [ ] *See, e.g.*, CX-706C (Drabik WS) at 107.

The second through the seventeenth elements of claim 8 recite:

> **assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]**

Motorola has established that these claim limitations are satisfied.

The claim term "assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "setting the value of the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] to the value of the frequency coefficient located at position p=[0-15]."

The claim term "a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "a value of the frequency coefficient located at a position p in the one dimensional array."

In compliance with the H.264 Standard, the Xbox assigns a 2-D frequency coefficient located at each of the n, m pairs identified in the claim a value of the 1-D frequency coefficient located at the corresponding position p set forth in the same claim element. CX-706C (Drabik WS) at 110-141, 204-210. The inverse scanning process for 4 4 coefficients is described at §8.5.6. CX-29 at 179-180 (shown in Figure 8-8(b)). As can be seen in Table 8-13, the decoder assigns a 2-D frequency coefficient located at

(n,m) (labeled in Table 8-13 as subscripts "i, j" of variable "c") = (0,0) the value of the 1-D frequency coefficient located at p (labeled "idx") = 0, and similarly assigns a 2-D frequency coefficient located at each of the other (n, m) pairs a value of a frequency coefficient located at p. CX-29 at 180. When presented with content coded in field mode, the Xbox invokes the field scan decoding functionality specified above. Thumpudi Tr. 1529.

In the Microsoft code, [ ] Wu Tr. 1544. For example, [ ] CX-284C at MS-MOTO_752_0000980729; Drabik Tr. 512-513.

The Xbox assigns each 2-D frequency coefficient located at n=0...3 and m=0...3 a value of the 1-D frequency coefficient located at p=0...15. CX-706C (Drabik WS) at 110-141; CDX-4C-23 to -41, and -48 to -61; Drabik Tr. 527. The Xbox always assigns a value from the 1-D array to each and every location of the 2-D array, [ ] Mitzenmacher Tr. 1695-1696. Each position of the [ ] as was admitted by Microsoft's expert. Mitzenmacher Tr. 1695. In addition, [ ] CX-706C (Drabik WS) at 183, 204-210; Drabik Tr. 483; 633-634.

Microsoft argues that the "assigning" limitations of apparatus claim 8 must be performed in order to infringe, citing cases in which the accused devices did not meet all limitations of the claims until the users modified the device. Unlike the devices at issue in those cases, however, the Xbox's software will *always* produce a 2-D array of 16 coefficients, and therefore will *always* meet all 16 of the "assigning" limitations, when presented with 4 4 field blocks. CX -706C (Drabik WS) at 110-120. It is therefore sufficient that the Xbox includes such software. *Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1205 (Fed. Cir. 2011); *see also Fantasy Sports Props., Inc. v. Sportsline.com, Inc.*, 287 F.3d 1108, 1118-9 (Fed. Cir. 2002). As in *Finjan* and *Fantasy Sports*, the limitations of the asserted claims of the '094 patent are directed to the capabilities of the claimed structures. Claim 8, for example, recites "[a] device *for* decoding" which includes "a generator". The assigning limitations contribute to the structural requirements of the generator.[60]

Microsoft has admitted that it tested the function in the Xbox code that assigns coefficients to [ ] CX-646C (Wu Dep. Tr.) at 44. In addition, there is circumstantial evidence that others use the Xbox to decode H.264 encoded interlaced video (including MBAFF video with 4 4 field blocks), as discussed in connection with the '596 patent. *See* Section II.f.3, *infra*. [ ] are specifically adapted to infringe, and have no non-infringing use. RRX-7C (Mitzenmacher RWS) at 133. Thus, Microsoft is also liable for contributing to and inducing infringement of the

[60] Likewise, claim 7 recites "[a] device *for* decoding" which includes "a scanner." The assigning limitations contribute to the structural requirements of the scanner. Claim 10 also recites structure ("[a] computer readable medium"), and its capabilities.

'094 patent for the same reasons discussed in connection with the '596 patent. *See* Section II.f.3, *infra*.

Claim 10

The preamble of independent apparatus claim 10 recites:

> **A computer readable medium encoded with a computer program used to control a video processor that receives a first signal wherein the first signal is represented in a one dimensional array of frequency coefficients wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15, the computer readable medium controlling the video processor in a method comprising:**

Motorola has established that this claim limitation is satisfied.

The claim term "one dimensional array" has been construed to mean "a set of items arranged in a single column or row." The claim term "one dimensional array of frequency coefficients" has been construed to mean "a set of frequency coefficients arranged in a single column or row."

The claim term "wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" has been construed to mean "the position of a frequency coefficient in the one dimensional array is represented by a variable p that can be 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15."

The Xbox satisfies the preamble. CX-706C (Drabik WS) at 220-223, 228-232. The Xbox includes a read/write nonvolatile memory with H.264 video decoder software that is loaded into RAM, and which the video processor (XCGPU) executes to decode digital video content in H.264 format. RRX-11C (Wu) 11; CX-706C (Drabik WS) at 222.

The first element of claim 10 recites:

> **generating a two dimensional array of frequency coefficients from the one dimensional array of frequency coefficients, wherein the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;**

Motorola has established that this claim limitation is satisfied.

The claim term "two dimensional array" has been construed to mean "a set of items arranged in rows and columns." The claim term "two dimensional array of frequency coefficients" has been construed to mean "a set of frequency coefficients arranged in rows and columns."

As discussed above, in connection with claim 8, the Xbox H.264 decoder includes a function that generates a 2-D array of frequency coefficients from the 1-D array of frequency coefficients, wherein the 2-D array of frequency coefficients is represented in columns and rows. The columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3. CX-706C (Drabik WS) at 224-32.

The second through the seventeenth elements of claim 10 recite:

> **assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]**

Motorola has established that these claim limitations are satisfied.

The claim term "assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "setting the value of the two dimensional frequency coefficient

located at n=[0-3] and m=[0-3] to the value of the frequency coefficient located at position p=[0-15]."

The claim term "a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "a value of the frequency coefficient located at a position p in the one dimensional array."

As discussed in the context of claim 8, above, each of the assigning limitations is satisfied by the Xbox decoder. CX-706C (Drabik WS) at 228-32; CDX-4C-23 to -41 and -48 to -61.

Claim 7

The preamble of independent apparatus claim 7 recites:

> **A device for decoding digital video content wherein the digital video content is represented in a one dimensional array of frequency coefficients, the device comprising:**

Motorola has established that this claim limitation is satisfied.

The claim term "one dimensional array" has been construed to mean "a set of items arranged in a single column or row." The claim term "one dimensional array of frequency coefficients" has been construed to mean "a set of frequency coefficients arranged in a single column or row."

The Xbox is a device for decoding digital video content wherein, as discussed in the context of claim 8 above, the digital video content is represented in a one dimensional array of frequency coefficients. CX-189 at MOTM_ITC 0507633-641; CX-706C (Drabik WS) at 243-44, 250-53.

The first element of claim 7 recites:

> **a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively, to produce a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;**

Motorola has established that this claim limitation is satisfied.

The claim term "scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" has been construed to mean "maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively." The claim term "a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively" has been construed to mean "portion of the decoder that maps the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively."

The claim term "two dimensional array" has been construed to mean "a set of items arranged in rows and columns." The claim term "two dimensional array of frequency coefficients" has been construed to mean "a set of frequency coefficients arranged in rows and columns."

The Xbox includes a scanner, which is the portion of the H.264 video decoder software running on the XCGPU. This meets this limitation for the reasons discussed in the context of claim 8. CX-706C (Drabik WS) at 245-53. In addition, the Xbox scanner scans [ ] consecutively. Mitzenmacher Tr. 1691 [

]

The second through the seventeenth elements of claim 7 recite:

> **assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]**

Motorola has established that these claim limitations are satisfied.

The claim term "assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "setting the value of the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] to the value of the frequency coefficient located at position p=[0-15]."

The claim term "a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "a value of the frequency coefficient located at a position p in the one dimensional array."

As discussed in the context of claim 8, above, each of the assigning elements is satisfied by the Xbox decoder. CX-706C (Drabik WS) at 249-53; CDX-4C-23 to -41 and -48 to -61.

3. Indirect Infringement

Motorola has not shown that Microsoft's accused products indirectly infringe all asserted claims of the '094 patent.

Motorola argues that Microsoft "contributes to and induces direct infringement by users of the Xbox." Motorola asserts that its infringement claims are based, in part, on the Xbox's implementation of the H.264 Standard. Compls. Br. at 80.

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Microsoft argues that Motorola has not established certain required elements of induced infringement and contributory infringement. Resp. Br. at 176-77.

Inducement requires specific intent to encourage another's infringement. *Ricoh*, 550 F.3d at 1341. Generic product usage instructions do not establish intent because the relevant question is whether "instructions teach *an infringing use* of the device such that we are willing to infer from those instructions an affirmative intent to infringe the patent." *Vita-Mix Corp. v. Basic Holding, Inc.*, 581 F.3d 1317, 1329 n.2 (Fed. Cir. 2009) (emphasis added).

Microsoft does not instruct its customers to use the Xbox to watch H.264 interlaced content. Motorola points to Microsoft's generic product usage instructions, including passages showing how Xbox connects to a TV. CX-706C (Drabik WS) at Q448, Q912 (citing CX-182). These instructions do not instruct users to play video that invokes the accused features. RRX-7C (Mitzenmacher RWS) at 87-88, 203-204. Motorola also relies on a Microsoft website that references Xbox's ability to decode H.264 video. CX-706C (Drabik WS) at Q449, 913 (citing CX-179). That website describes H.264 in general, but not the interlaced H.264 content at issue here. RRX-7C (Mitzenmacher RWS) at 88-89, 204-205.

Motorola's allegation of contributory infringement fails because Xbox has substantial non-infringing uses. *Vita-Mix*, 581 F.3d at 1327-1328. None of Xbox's uses that were discussed during the Investigation use the accused features, including video games, (RX-386C (Thumpudi WS) at 2-3), non-H.264 video formats, (RRX-7C (Mitzenmacher RWS) at 88-89, 204-205, citing CX-179), and progressive H.264 content. RX-386 (Thumpudi WS) at 3.

C. Validity of the '094 Patent

Microsoft seeks to invalidate the '094 patent under 35 U.S.C. § 103 based on two combinations of references: RX-297 ("MPEG 91/228") in combination with RX-299 ("JVT-B068"); and RX-293 (MPEG-2 Standard) in combination with RX-299.

For the reasons set forth below, Microsoft has not shown by clear and convincing evidence that the asserted claims of the '094 patent are invalid.

1. MPEG 91/228 (RX-297) Combined with JVT-B068 (RX-299)

MPEG 91/228 discloses four 8 8 scan patterns. RX -297 at 18; Orchard Tr. 1886, 1888. It does not show any scan pattern for a 4 4 block. In his testimony, Dr. Orchard did not address the fact that the 8 8 scans proposed in the MPEG91/228 reference were rejected for the MPEG-2 standard, which suggests that they were not perceived to be useful. Orchard Tr. 1888-89. Dr. Orchard asserts it would have been obvious that one of the 8 8 scans, a vertical scan, would have been a good starting poin t for deriving a 4 4 scan. RX-316C (Orchard WS) at 72-73. However, he presented no evidence to support the vertical scan as a starting point. He also did not identify any reference proposing a 4 4 vertical scan. Orchard Tr. 1896. Thus, Dr. Orchard's proposed 4 4 vertical scan is a speculative hypothetical.

In fact, the two scans that Dr. Orchard proposes to combine teach away from each other and combining them would render both unsuitable for their intended purposes. Specifically, the 8 8 vertical scan in MPEG91/228 is for "non-intra" blocks, whereas the alternate field scan in Fig 2.3(a) of JVT-B068 was proposed for the exact opposite kind of source material, an intra-coded macroblock. RX-299.003. Furthermore, JVT-B068 was crafted over a decade after MPEG91/228, and was for a different standard.

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Specifically, JVT–B068 discloses the use of 4 4 blocks because it proposed a modification to the H.26L specification, which was based on 4 4 transforms. RX-299.0003; Orchard Tr. 1891. In contrast, MPEG 91/228 discloses a scan pattern for 8 8 blocks because MPEG-2 was based on 8 8 transforms. RX -297 at 18; CX-719C (Drabik RWS) at 88; Drabik Tr. 2399. 8 8 and 4 4 scan patterns are not related in the simple way asserted by Dr. Orchard. CX-719C (Drabik RWS) at 81-82. Dr. Orchard did not take any of these important differences into account in his analysis. Orchard Tr. 1889-93, 1897.

It is impermissible hindsight analysis, to suggest that a person of ordinary skill in the art would have been guided by these references to try the claimed scanning path of the '094 patent or would somehow be motivated to combine their teachings. There is no evidence that any person of ordinary skill in the art knew of the existence of a "finite number of identified, predictable solutions" including the claimed scanning path. *KSR*, 550 U.S. at 402-03. Microsoft points to testing by the inventors of various scan patterns, including the claimed scan pattern, as evidence of the obviousness of their invention, but the inventors' work was not in the prior art. The fact that the authors of JVT-B068 arrived at a different 4 4 scanning path after te sting is evidence that the claimed scan pattern was not one of a "finite number of identified, predictable solutions." Finally, the alternate 4 4 scan pattern of the JVT -B068 reference was labeled prominently as a prior art scan in FIG. 1 of the '094 patent, and the reference itself was disclosed by the applicants to the Patent and Trademark Office during prosecution of the '094 patent, and the Patent Examiner allowed the issued claims over this reference. JX-9 at FIG. 1.

In addition, even if a person of ordinary skill were to combine the references, he or she would not be in possession of a generator that satisfies the "assigning" limitations of claim 8. In an attempt to overcome this deficiency, Dr. Orchard opines that a person of ordinary skill in the art would create a hypothetical 4 4 vertical scan pattern from the 8 8 vertical scan of MPEG91/228 and then modify that scan by selectively rearranging part of the scan to look like part of a scan in the JVT-B068. RX-316C (Orchard WS) at 87-88. But Dr. Orchard fails to explain why a person of ordinary skill in the art would look to combine a vertical scan designed for non-intra blocks with one designed for intra blocks, instead of combining intra scans together and non-intra scans together. Nor does he explain why a person of ordinary skill in the art would assume that the distribution of energy among a block of coefficients was the same for the 4 4 transforms of H.26L as for the 8 8 transforms of MPEG 91/228. CX -719C (Drabik RWS) at 87. JVT-B068 also teaches away from MPEG91/228 because MPEG 91/228 teaches a vertically-oriented scan pattern that proceeds only from *top to bottom* and only from *left to right*, whereas JVT-B068 teaches a pattern that moves *right to left* from position 3 to position 4, moves *horizontally* from position 5 to position 6, and moves up from *bottom to top* from position 6 to position 7. CX-719C (Drabik RWS) at 89.

Moreover, a person of ordinary skill would not know *a priori* how altering a scan pattern piecemeal would affect performance, and therefore would not know that swapping the order of three coefficients would necessarily improve performance for a suite of test video sequences; this is why scanning patterns are tested *in situ*. CX-719C (Drabik RWS) at 89; Wang Tr. 391. The only apparent basis for Dr. Orchard's analysis is the '094 Patent, which he used as a template for piecing together a 4 4 scan from parts

of two scans designed for mutually exclusive applications: a vertical non-intra 8 8 scan and an intra 4 4 scan. A person of ordinary skill in the art would need to consider the scan pattern as a whole. Dr. Limin Wang, inventor of the '094 patent, confirmed that it was not obvious to try the claimed scan pattern. Significant testing and statistical analysis was required. Wang Tr. 393-394. Thus, the combination by Dr. Orchard based on the '094 patent itself is improper because it relies on impermissible hindsight. CX-719C (Drabik RWS) at 89.

For the reasons discussed above, the combination of MPEG 91/228 with JVT-B068 does not disclose claims 7 and 10. CX-719C (Drabik RWS) at 91-93.

2. MPEG-2 Standard (RX-293) Combined with JVT-B068 (RX-299)

The combination of JVT-B068 with the MPEG-2 Standard would not have rendered obvious asserted claims 7, 8 and 10 of the '094 patent, either. The MPEG-2 Standard discloses an 8 8 scan pattern. During prosecution, the Examiner cons idered the same exact 8 8 scan pattern – it was disclosed in U.S. Patent 5,500,678 to Puri – and allowed the '094 claims. CX-125; JX-10 at MOTM_ITC 0001953. The Examiner issued the '094 patent claims over the MPEG-2 8 8 scan pattern in Puri. JVT -B068 was also disclosed by the applicants to the Patent and Trademark Office during the prosecution of the '094 patent, and the Patent Examiner issued the '094 patent over this reference.

The combination of MPEG-2 and JVT-B068 does not disclose claim 8. The combination of MPEG-2 with JVT–B068 does not render these elements obvious at least because JVT–B068 teaches away from MPEG-2. Drabik Tr. 2397, 2399. Specifically, JVT–B068 discloses the use of 4 4 blocks because it proposed a modification to the

H.26L specification, which was based on 4 4 transforms. RX -0299.003; Orchard Tr. 1891. In contrast, MPEG-2 discloses a scan pattern for 8 8 blocks be cause MPEG-2 was based on 8 8 transforms. CX -719C (Drabik RWS) at 96-97; Drabik Tr. 2399. 8 8 and 4 4 scan patterns are not related in the simple way asserted by Dr. Orchard. CX -719C (Drabik RWS) at 81-82.

Even assuming that a person of ordinary skill in the art was motivated to reduce the MPEG-2 alternate scan pattern from 8 8 to 4 4, a person of ordinary skill in the art would still not be motivated to modify JVT–B068 in view of MPEG-2 by re-ordering coefficients 3, 4, and 5, and reversing the positions of 6 and 7, as Microsoft suggests. CX-719C (Drabik RWS) at 97-98. A person of ordinary skill in the art, looking to MPEG-2 for how to modify JVT-B068, would not have known to re-order the coefficients at positions "2," "4," and "5" of JVT-B068 based on the two-step hypothesis Microsoft proposes (that expected energy strictly decreases with increasing scan position and that total expected energies of 2 2 groups of coefficients in the MPEG -2 8 8 scan would have been compared by determining which included uniformly higher scan positions). CX-719C (Drabik RWS) at 98-100. A person of ordinary skill might have reasonably chosen to compare aggregate 2 2 groups of coefficients in many other ways, including ways that would have suggested that positions "2", "4" and "5" all have the same total expected energy. CX-719C (Drabik RWS) at 101-02. Viewed from this perspective, MPEG-2 teaches a person of ordinary skill in the art that the order of positions "2," "4," and "5" of JVT-B068 is unimportant. *Id.* In addition, a person of ordinary skill in the art following Microsoft's technique would be motivated not only to reverse positions "6" and "7" of JVT-B068 (because "7" has a higher total expected

energy than "6") but also to reverse positions "6" and "8" (because "8" also has a higher total expected energy than "6") and positions "11" and "12" (because "12" has a higher total expected energy than "11"). This would lead to an altogether *different* scan pattern than the scan pattern claimed in the '094 patent. CX-719C (Drabik RWS) at 100-02.

Finally, as Dr. Orchard acknowledges, the JVT-B068 reference cites MPEG-2. The authors of JVT-B068 (Sony) were clearly aware of MPEG-2, yet they did not make the modifications that Dr. Orchard suggests. They were led to a *different* scan pattern than the scan pattern claimed in the '094 patent. CX-719C (Drabik RWS) at 102; Orchard Tr. 1903. This shows that the result was not obvious to these skilled artisans.

For the reasons as discussed above, the combination of MPEG-2 and JVT-B068 does not disclose claims 7 and 10. CX-719C (Drabik RWS) at 103-05.

3. Objective Evidence of Non-Obviousness

The objective evidence of non-obviousness in this case shows that the invention in the asserted claims of the '094 patent is not obvious. This evidence includes evidence of long-felt need, prior failure of others, and commercial success.

There was, at the time of the '094 invention, a long-felt need for better video compression. CX-719C (Drabik RWS) at 114-15. This included a long-felt need for better coding tools to compress interlaced video. *Id.* In the 1990's, with the introduction of HDTV and other high resolution standards, there was increasing demand to deliver sufficient video quality at bit rates lower than 2 Mbits/sec. *Id.* Over time, this included a need for a 4 4 scan path that allowed enhanced coding efficie ncy and lower bit rates, particularly for interlaced video. *Id.* The '094 patent states that "there was a need in the art for scanning paths that allow for more compression than do traditional zig-zag

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scanning paths." JX-9 at col. 4, lns. 19-21. The 8 8 zig -zag and alternate scans paths used in the prior standards did not provide sufficient compression for interlaced video. *Id.* Video coding experts also recognized the need for enhanced coding efficiency and lower bit rates. CX-170 at 560 ("an increasing number of sources and growing popularity of high definition TV are creating greater needs for higher coding efficiency"). CX-107 at 1.

The alleged prior art relied upon by Microsoft's expert for the '094 patent demonstrates the failure of others to produce the 4 4 scan of the '094 patent. Despite having the knowledge and experience of at least a person of ordinary skill and the motivation to produce the better scan path, the authors of JVT-B068 did not arrive at the 4 4 scan of the '094 patent, which was optimized for the coding of interlaced video. The authors of JVT-B068 recognized in their submission that "MPEG-2 cannot deliver sufficient video quality at those rates [less than 2 Mbits/sec]." RX-299.0001. They further recognized that the H.26L specification "does not contain scan methods, which provide higher coding efficiency with interlaced sequences." *Id.* Yet, the JVT-B068 authors produced a *different* scan pattern than the '094 inventors.

In May 2002, Motorola submitted to the Joint Video Team its proposal for alternate coefficient scanning patterns. The claimed 4 4 scan of the '094 patent was among the scans submitted. CX-198C at MOTM_ITC_0089797. The JVT-C140 submission contained the results of simulations of Motorola's 4 4 scan which showed "savings over a wide range of bit rates by using the alternate scans over the reference scans for interlaced material." CX-198C at MOTM_ITC_0089801. *See also* CX-719C (Drabik RWS) at 116.

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Motorola's scan pattern also earned the praise of others. Sony, the same authors of JVT-068 relied on by Microsoft, verified Motorola's 4 4 scan proposal (JVT -C140) and produced test results showing that Motorola's proposed scan increased coding efficiency. CX-707C (Wang) 11-12, CX-209C; CX-719C (Drabik RWS) at 116-17; Drabik Tr. at 2400. Motorola's proposal for the 4 4 scan, not Sony's proposal, was adopted by the Joint Video Team of video coding experts at the October 2002 meeting in Geneva. Motorola's 4 4 scan was incorporated into the H.264 Standard. CX-707C (Wang) 11-12; CX-719C (Drabik RWS) at 116-17.

4. Written Description Requirement

Microsoft argues that the '094 patent does not contain sufficient description of the decoding inventions of claims 7, 8 and 10 to demonstrate that the inventors were in possession of the claimed inventions at the time of filing. The disclosure in the '094 patent is more than sufficient to satisfy the written description requirement.

"decoding….coefficients" (claims 7, 8). One of skill in the art would recognize that the inventors possessed the idea of "decoding digital video content wherein the digital video content is represented in a one dimensional array of frequency coefficients," as required by claims 7 and 8. CX-719C (Drabik RWS) at 106. The '094 patent is directed to frequency scanning paths for use in coding digital video content. Coding of digital video content includes both *encoding and decoding*. Drabik Tr. 2379. The TECHNICAL FIELD of the '094 specification states that the "present invention relates to digital video encoding, *decoding*, and bitstream generation. JX-9 at col. 1, lns. 17-18; CX-719C (Drabik RWS) at 106-07.

The specification states that "[t]he N by M array of frequency coefficients is [2-D] and must be converted into a one dimensional array of frequency coefficients so that the *encoder or decoder* can use the frequency coefficients to *encode or decode* the picture." JX-9 at col. 3, lns. 40-45. The specification further indicates that encoding and decoding are complementary processes, where *encoding* is *compressing* digital video content and *decoding* is *decompressing* digital video content. JX-9 at col. 1, ln. 62 – col. 2, ln. 3.

FIG. 5 of the '094 patent discloses the sequence of operations included in the encoding process and indicates the order of the encoding operations from left to right—transform, quantization, frequency coefficient scan, and entropy encoding. As disclosed in the specification, decoding is "decompressing" the encoded (compressed) video data. One of skill in the art would understand from reading the specification that the sequence of the decoding operations is reversed, *i.e.*, the decoding operations proceed in reverse order from right to left: entropy decoding, inverse frequency coefficient scan, inverse quantization, and inverse transform. CX-719C (Drabik RWS) at 106-07.

The '094 patent specification discloses examples of each operation. The specification discloses one method of transform domain coding, and gives an equation for discrete cosine transform (DCT) (JX-9 at col. 7, lns. 21-49)); it discloses an example of quantization (JX-9 at col. 7, ln. 50-col. 8, ln. 20); it discloses the process of run-length coding (JX-9 at col. 8, lns. 28-37); and it discloses entropy coding, context-adaptive binary arithmetic coding (CABAC) (JX-9 at col. 8, lns. 36-41). The specification also discloses that these coding techniques can be used in processes that scan frequency coefficients using the disclosed scan patterns. CX-719C (Drabik RWS) at 107-08.

The specification discloses that "[v]ariable block size transform coding means that the transform domain coding can be performed on blocks of varying sizes. For example, transform domain coding can be performed on 4 by 4 pixel blocks (405) for a particular macroblock...." JX-9 at col. 7, lns. 1-6. In particular, it discloses as an embodiment of the invention, FIG. 6, which shows a preferable scan pattern for a 4 4 pixel block's frequency coefficient array. The specification further discloses in Table 2 the scan pattern for the 4 4 pixel block, with the 1 -D frequency coefficients represented by variable p and the columns and rows of the 2-D frequency coefficients represented by variables n (column) and m (row). JX-9 at col. 9, lns. 11-43. One of ordinary skill would recognize that the inventors of the '094 patent invented using this 4 4 scan for both encoding and decoding processes. CX-719C (Drabik RWS) at 108.

<u>"wherein...variable p" (claims 8, 10)</u>. The preamble of claim 8 contains the phrase "wherein the digital video content is represented in a one dimensional array of frequency coefficients wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15." One of skill in the art would recognize that the inventors of the '094 patent invented decoding digital video content wherein the digital video content is represented in a 1-D array of frequency coefficients in the context of the '094 patent. CX-719C (Drabik RWS) at 106-10. Table 2 of the '094 patent describes that coefficients in the 1-D array are labeled 0-15 in accordance with their scanning order. CX-719C (Drabik RWS) at 108.

The preamble of claim 10 contains the phrase "wherein the first signal is represented in a one dimensional array of frequency coefficients wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5,

6, 7, 8, 9, 10, 11, 12, 13, 14, or 15." As discussed above, one of skill in the art would recognize that the inventors of the '094 patent invented decoding digital video content wherein the first signal is represented in a 1-D array of frequency coefficients in the context of the '094 patent. CX-719C (Drabik RWS) at 106-10.

"a scanner…variable m" (claim 7). Microsoft argues that claim 7 is invalid under the written description requirement because the specification does not sufficiently describe the phrase "a scanner that scans the one dimensional array of frequency coefficients in a scanning order p starting at 0 and ending at 15, consecutively, to produce a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3." However, as discussed above, the specification discloses FIG. 6, which provides the 4 4 scan that may be implemented in hardware or software to scan the 1-D array of frequency coefficients according to the language of claim 7. The specification further discloses in Table 2 the scan pattern for the 4 4 pixel block, with the 1 -D frequency coefficients represented by variable p and the columns and rows of the 2-D frequency coefficients represented by variables n (column) and m (row). JX-9 ('094 patent) at col. 9, lns. 11-43. Thus, the patent demonstrates to one of skill in the art that the inventors invented and possessed the idea of a scanner according to the claim language. CX-719C (Drabik RWS) at 111.

"assigning….located at p" (claims 7,8,10). Microsoft argues that these elements are invalid under the written description requirement because the specification does not sufficiently describe the elements "assigning the two dimensional frequency coefficient

located at n=[0-3] and m=[0-3] a value of the one dimensional frequency coefficient located at p=[0-15]." However, when read in light of the specification, one of skill in the art would recognize that the inventors of the '094 patent invented "assigning the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] a value of the one dimensional frequency coefficient located at p=[0-15]" in the context of the '094 patent. The specification discloses in Table 2 the scan pattern for the 4 4 pixel block, with the 1 -D frequency coefficients represented by variable p and the columns and rows of the 2-D frequency coefficients represented by variables n (column) and m (row). JX-9 at col. 9, lns. 11-43. One of ordinary skill would recognize that the inventors of the '094 patent invented the 4 4 scan for assigning the 2 -D frequency coefficient located at n = [0..3] and m = [0..3] a value of the 1-D frequency coefficient located at p = [0...15] in the context of the claims. CX-719C (Drabik RWS) at 112.

<u>"generating…variable m" (claim 10)</u>. Microsoft also argues that the phrase "generating a two dimensional array of frequency coefficients from the one dimensional array of frequency coefficients, wherein the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3" of claim 10 is invalid under the written description requirement. However, as discussed above, the specification discloses FIG. 6, which provides the 4 4 scan pattern that may be used for generating a 2-D array of frequency coefficients from a 1-D array of frequency coefficients. The specification also discloses in Table 2 the scan pattern for the 4 4 pixel block, with the columns and rows of the 2 -D frequency coefficients represented by variables n (column) and m (row). JX-9 at col. 9, lns. 11-43. The

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specification further discloses that, in the context of an encoder, "[t]he encoder generates the one dimensional array of frequency coefficients by scanning the two dimensional array of frequency coefficients using a particular scanning path." JX-9 at col. 3, lns. 45-48. One of skill in the art would readily understand from reading the disclosure that generating in the context of a decoder is reversed, that is, the decoder generates the 2-D array of frequency coefficients from the 1-D array of frequency coefficients using a particular scanning path. Thus, the patent demonstrates to one of skill in the art that the inventors invented and possessed the idea of "generating..." according to the claim language. CX-719C (Drabik RWS) at 113.

"generator...variable m" (claim 8). Claim 8 contains the phrase "a generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3." Microsoft argues that this phrase is invalid under the written description requirement because the specification does not describe it sufficiently. However, as discussed above, the specification discloses the FIG. 6 scan pattern, which is used to produce a representation of the digital video content in a 2-D array of frequency coefficients according to the language of claim 8. The specification further discloses in Table 2 the scan pattern for the 4 4 pixel block, with the 2-D frequency coefficients represented by variables n (column) and m (row). JX-9 at col. 9, lns. 11-43. Thus, the patent clearly demonstrates to one of skill in the art that the inventors invented and possessed the idea of "a generator that produces a representation

of the digital video content in a two dimensional array of frequency coefficients. . ." according to the language of claim 8. CX-719C (Drabik RWS) at 113.

5. Indefiniteness for Functional Claiming

Microsoft argues that the term "scanner" in claim 7 and "generator" in claim 8 are indefinite for "functional claiming." As discussed above in the claim construction section of this brief, these terms are recognized in the art as connoting structure. There is nothing wrong with having functional limitations associated with these structures. There is also nothing wrong with the terms encompassing broad classes of structures. *Linear Technology Corp. v. Impala Linear et al.*, 379 F.3d 1311, 1319-1321 (Fed. Cir. 2004). When read in light of the specification, it is clear to one of ordinary skill in the art that the terms "scanner" and "generator" mean the hardware or software portion of a decoder that scans in accordance with the claim language. Drabik Tr. 478-80. The '094 patent teaches that applications for video compression are varied, and include various hardware and software implementations. JX-9 at col. 1, lines 26-30; CX-719C (Drabik RWS) at 111-12. Claims 7 and 8, directed to devices for decoding, and including the additional structure connoted by the "scanner" and "generator" terms, are not purely functional.

6. Mixing Method and Apparatus

Microsoft argues that claims 7 and 8 are invalid under Section 112 for claiming both an apparatus and a method of using an apparatus. However, neither claim impermissibly mixes classes of subject matter. Claims 7 and 8 each claim a "device for decoding" that includes a "scanner" or "generator." These scanner and generator structures are described in part by the "assigning" limitations of the claims. The

"assigning" limitations are not described as methods of using the claimed decoding device. Accordingly, the *IXPL Holdings* and *In re Katz* cases cited by Microsoft do not apply. *See, e.g., In re Katz Interactive Call Processing Patent*, 639 F.3d 1303, 1318 (Fed. Cir. 2011) ("Like the language used in the claim at issue in IPXL ("wherein . . . the user uses"), the language used in Katz's claims ("wherein . . . callers digitally enter data" and "wherein . . . callers provide . . . data") is directed to user actions, not system capabilities.").

There is a difference between an improper mixed method-apparatus claim, and a wholly appropriate functional limitation. There is nothing inherently wrong with qualifying a structure in functional terms. Functional language does not in and of itself render a claim improper. *Linear Technology Corp.*, 379 F.3d at 1319-1321; *Yodlee, Inc. v. CashEdge, Inc.*, No. C05-01550 SI, 2006 WL 3456610 at *4 (N.D. Cal. 2006); *Eolas v. Adobe Sys.*, 2011 WL 3665342 (E.D. Tex. 2011). One having ordinary skill in the art would understand the scope of the claim and the circumstances under which the claims 7 and 8 are infringed. CX-719C (Drabik RWS) at 114.

D. Domestic Industry (Technical Prong)

Motorola's domestic industry products are Motorola VIP12XX series of set top boxes. The VIP12XX series of set-top boxes include the VIP1200, VIP1208, VIP1216, and VIP1225. CX-106C at MOTM_ITC 0020359; CX-706C (Drabik WS) at 258.

For the reasons set forth below, Motorola has satisfied the technical prong of the domestic industry requirement with respect to the '094 patent.

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Claim 8

The preamble of independent apparatus claim 8 recites:

> **A device for decoding digital video content wherein the digital video content is represented in a one dimensional array of frequency coefficients, wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15, the device comprising:**

Motorola has satisfied the preamble.

The claim term "one dimensional array" has been construed to mean "a set of items arranged in a single column or row." The claim term "one dimensional array of frequency coefficients" has been construed to mean "a set of frequency coefficients arranged in a single column or row."

The claim term "wherein the one dimensional array of frequency coefficients is represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15" has been construed to mean "the position of a frequency coefficient in the one dimensional array is represented by a variable p that can be 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15."

In compliance with the H.264 Standard, and consistent with the above claim constructions, the VIP12XX decodes digital video content in a manner that satisfies the preamble. CX-706C (Drabik WS) at 262-66, 299-302. The SMP8634 chip incorporated into the VIP12XX has an H.264 decoder that includes the inverse scan. CX-214C at SIGMA_0000542. In the SMP8634, the "one dimensional array" is a [ ] of a [ ] and a [ ] that [ ] as [ ]. CX-214C at SIGMA_0000578.

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] CX-214C at SIGMA-0000578. [

] CX-706C (Drabik WS) at 302; Drabik Tr. 555.

Microsoft argues that the [ ] cannot be the "one dimensional array" because [ ] However, Dr. Drabik identified more than just the [ ] as the 1-D array; he identified the [ ] values. Dr. Mitzenmacher admitted that [ ] are the coefficients and, to send more than one coefficient, the VIP12XX would send multiple instances of [ ] Mitzenmacher Tr. 1709-10. Thus, [ ] comprise the claimed "one dimensional array." CX-706C (Drabik WS) at 265-66.

Microsoft also argues that this array does not have a length of 16 and is not "represented by a variable p=0, 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, or 15." However, Dr. Mitzenmacher admitted that the [ ] and further admitted that [ ]. Mitzenmacher Tr. 1710. [

]

Finally, Microsoft argues that the [ ] is not the claimed "one dimensional array." This is irrelevant. Dr. Drabik did not identify the [ ] as the claimed "one dimensional array" in his

testimony.[61]

The first element of claim 8 recites:

> **a generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients, the two dimensional array of frequency coefficients is represented in columns and rows wherein the columns are represented by a variable n=0, 1, 2, or 3, and the rows are represented by a variable m=0, 1, 2, or 3, further comprising;**

Motorola has satisfied this claim element.

The claim term "generator that produces a representation of the digital video content in a two dimensional array of frequency coefficients" has been construed to mean "portion of the decoder that produces a representation of the digital video content in a two dimensional array of frequency coefficients."

The VIP12XX includes a generator, which is the portion of the H.264 video decoder [ ] that produces a representation of the digital video content in a 2-D array. In compliance with the H.264 Standard, the VIP12XX meets this limitation. CX-706C (Drabik WS) at 266-72, 299-302.[62]

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[61] Dr. Drabik identified the [ ] as a "one dimensional array" in claim charts attached to his expert reports. However, Dr. Drabik amended this identification in his Witness Statement submitted September 27, 2011, in direct response to a late supplemental report submitted by Microsoft's expert.

[62] Microsoft has objected to Q487 on page 271 of Dr. Drabik's Witness Statement (CX-706C), submitted September 27, 2011. By its objection to Q487, Microsoft seeks once again to reopen Order No. 32. Q487 was the subject of a Microsoft motion *in limine* that was denied by Order No. 32. *See* Motion Docket No. 752-18 at 4-5; Order No. 32 at 2. Dr. Drabik's testimony in Q487 relates to the late Sigma discovery that the Court granted Motorola leave to rely upon in Order No. 24. Following that order, Microsoft served a supplemental report that addressed the Sigma discovery. *See* Clements Decl., Exhibit A Supplemental Expert Report of Dr. Michael Mitzenmacher. Dr. Drabik's testimony in Q487 is directly responsive to ¶97 of Mitzenmacher's Supplemental Report. There is no

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The H.264 Standard specifies an inverse field scan for 4 4 transform coefficients wherein the output of the process is a two-dimensional array of 4 4 values. CX -29 at 179-80.

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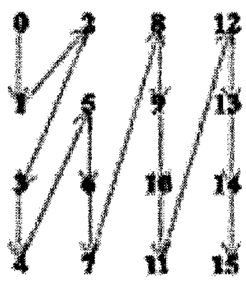
prejudice to Microsoft by the admission of Q487. Microsoft had three months to respond to Dr. Drabik's testimony in Q487, and responded to Q487. *See, e.g.*, Dr. Mitzenmacher's Rebuttal Statement, RRX-7C (Mitzenmacher RWS) at 254, 270-72. In connection with Order No. 24, Microsoft also had an opportunity to depose Dr. Drabik on his opinions expressed in Q487, but declined to do so. Microsoft's objection is moot in view of Order No. 32, there is no prejudice to Microsoft, and Microsoft's objection to Q487 is overruled.

CX-344C at SIGMA_SRC_0000039-41 (emphases added). [

] CX-706C (Drabik WS) at 269. [

] Accordingly, the field scan pattern is as follows:



This is the scan pattern claimed in the '094 patent. *See also* CX-344C at SIGMA_SRC_0000033, SIGMA_SRC_0000040. [

] CX-706C (Drabik WS) at 270.

[

]

CX-214C at SIGMA_0000579 (emphases added); *see also* CX-706C at 271; RRX-7C at 263.

Microsoft argues that [ ] because it [ ] However, as Dr. Drabik explained, [ ] it output by [ ] CX-706C (Drabik WS) at 269. The next stage in the decoding pipeline of the SMP8634 understands [ ] otherwise, the inverse transform could not be performed properly.

Microsoft also argues that a [ ] is not the claimed "two dimensional array." This argument is irrelevant; Dr. Drabik did not identify the [ ] as the claimed "two dimensional array" in his testimony. CX-706C (Drabik WS) at 270-71.

Finally, Microsoft argues that there is no "generator" in the VIP12XX because the [ ] cited by Dr. Drabik is just a [ ] that does not, by itself, [ ]. However, Microsoft ignores Dr. Drabik's testimony that explains how [ ] CX-706C (Drabik WS) at 270-71.

The second through the seventeenth elements of claim 8 recite:

> **assigning the two dimensional frequency coefficient located at n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]**

Motorola has satisfied these claim elements.

The claim term "assigning the two dimensional frequency coefficient located at

n=[ ] and m=[ ] a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "setting the value of the two dimensional frequency coefficient located at n=[0-3] and m=[0-3] to the value of the frequency coefficient located at position p=[0-15]."

The claim term "a value of the one dimensional frequency coefficient located at p=[ ]" has been construed to mean "a value of the frequency coefficient located at a position p in the one dimensional array."

The VIP12XX meets these limitations. CX-706C (Drabik WS) at 272-302. The H.264 Standard describes the inverse scanning process for 4 4 coefficients. CX -29 at 179-80 (shown in Figure 8-8(b)). Sigma's HDL module [ ] confirms that this step is performed. CX-344C at SIGMA_SRC_0000039-41. The VIP12XX assigns each two dimensional frequency coefficient located at n=0...3 and m=0...3 a value of the 1-D frequency coefficient located at p=0...15. The VIP12XX always assigns a value from the 1-D array to each and every location of the 2-D array, regardless of the number of nonzero values. CX-706C (Drabik WS) at 270. Each position of the 1-D array between the positions identified by the [ ]. The zero values, like the nonzero values, are assigned to locations in the [ ]. If the 1-D array contains 16 non-zero values, the VIP12XX assigns all 16 of those values. CX-706C (Drabik WS) at 301-302.

Microsoft argues that the VIP12XX does not meet the "assigning" limitations because being capable of assigning sixteen frequency coefficients is not sufficient to show infringement. As discussed above with respect to infringement, Microsoft is

incorrect as a matter of law. The VIP12XX meets the "assigning" limitations because its hardware assigns 16 frequency coefficients when decoding digital video content, regardless of whether that video content contains a 1-D array with 16 nonzero values.

VII. U.S. Patent No. 6,980,596

U.S. Patent No. 6,980,596 ("the '596 patent") is titled, "Macroblock Level Adaptive Frame/Field Coding for Digital Video Content." JX-7 ('596 patent). The '596 patent issued on December 27, 2005, and the named inventors are Limin Wang, Rajeev Gandhi, Krit Panusopone, and Ajay Luthra. *Id.* The '896 patent relates to "encoding and decoding of digital video content," and more specifically, relates to "frame mode and field mode encoding of digital video content at a macroblock level as used in the MPEG-4 Part 10 AVC/H.264 standard video coding standard." *Id.* at col. 1, lns. 22-26 (Technical Field).

Motorola asserts independent method claim 1 and dependent claim 2. The asserted claims read as follows:

> 1. A method of encoding or decoding digital video content, said digital video content comprising a stream of pictures which can each be intra, predicted, or bi-predicted pictures, each of said pictures comprising macroblocks, said method comprising the steps of:
>
> selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode;
>
> arranging said group of neighboring macroblocks for processing into frame macroblocks or field macroblocks according to the selected one of said frame mode or said field mode; and
>
> encoding or decoding said frame macroblocks or said field macroblocks, wherein, the step of arranging said group of neighboring macroblocks for processing into

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> frame macroblocks or field macroblocks includes the step of:
>
> > in frame mode, jointly processing two fields in said group of neighboring macroblocks, said group of neighboring macroblocks being divided into frame macroblocks, and each of said frame macroblocks including both top and bottom field pixels;
> >
> > in said field mode, separately processing two fields of said group of neighboring macroblocks, said group of neighboring macroblocks being split into field macroblocks, and each of said field macroblocks including either top or bottom field pixels, and wherein said frame macroblocks and said field macroblocks are the same size.
>
> **2**. The method of claim **1**, wherein said frame or field macroblocks can be divided into blocks, and each of said block comprises 16x16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels.

JX-7 at col. 18, lns. 6-38.

A. Claim Construction[63]

1. "macroblock" (claims 1, 2)

Claim Term	Motorola's Proposed Constructions	Microsoft's Proposed Constructions
"macroblock" (claims 1, 2)	a picture portion comprising a 16 16 pixel region of luma and corresponding chroma samples	a rectangular group of pixels

The claim term "macroblock" appears in the preamble and each of the three steps

[63] A person of ordinary skill in the art of the '596 patent in 2001 would have had at least a bachelor's degree in electrical or computer engineering or the equivalent, and at least three years of work experience in the field of video processing, or at least a master's degree in electrical or computer engineering or the equivalent, and at least one year of work experience in the field of video processing. CX-706C (Drabik WS) at 7.

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of independent method claim 1, and in claim 2. JX-7 at col. 18, lns. 6-38.[64]

Motorola construes the term to mean "a picture portion comprising a 16 16 pixel region of luma and corresponding chroma samples." Compls. Br. at 118; RX-394 (Joint Identification of Claim Terms and Proposed Constructions) at 1. Microsoft construes the term to mean "a rectangular group of pixels." Resp. Br. at 189; RX-394 at 1.

As proposed by Microsoft, the claim term "macroblock" is construed to mean "a rectangular group of pixels."[65]

The '596 patent expressly defines the term "macroblock."

> FIG. 2 shows that each picture (200) is preferably divided into slices (202). A slice (202) comprises a group of macroblocks (201). <u>A macroblock (201) is a rectangular group of pixels.</u> As shown in FIG. 2, <u>a preferable macroblock (201) size is 16 by 16 pixels</u>.

JX-7 at col. 5, lns. 61-65 (emphasis added).

According to the '596 patent, "[a] macroblock (201) is a rectangular group of pixels." The above specification portion also explains that the 16x16 macroblock size is only an example. Additionally, the specification explains that the dimensions of a macroblock are variable. JX-7 at col. 7, lns. 14-17 ("In FIG. 5, the macroblock has M rows of pixels and N columns of pixels. A preferable value of N and M is 16, making the macroblock (500) a 16 by 16 pixel macroblock.") Figures 5 and 8 depict this variable representation – the macroblocks are shown as having dimensions M x N, not 16 x 16.

---

[64] Although the term used in the claims is actually the plural form "macroblocks," the administrative law judge is construing the singular form "macroblock."

[65] It is noted that the United States District Court of Washington (Western District) construed the claim term "macroblock" to mean "a rectangular group of pixels." *Microsoft Corp. v. Motorola Mobility, Inc.*, No. C10-1823-JLR, Dkt. No. 258 at 17 (W.D. WA., Apr. 10, 2012).

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The specific values M=16 and N=16 are only part of a preferred embodiment. Claims are not limited to the preferred embodiment.

Despite this express definition, Motorola proposes limiting "macroblock" to the size of the preferred embodiment: "16 x 16 pixel region of luma and corresponding chroma samples." Limiting a "macroblock" to a 16x16 pixel region is inconsistent with the specification.

Motorola argues that the H.264 draft standard that the patent incorporates provides an explicit definition of macroblock. Compls. Br. at 119. Motorola, however, ignores that the patent expressly states that it is not limited to any standard. JX-7 at col. 4, lines 54-57 ("Although this method of AFF encoding is compatible with and will be explained using the MPEG-4 Part 10 AVC/H.264 standard guidelines, it can be modified and used as best serves a particular standard or application."); *see also* Drabik Tr. 2417-18. Indeed, on cross examination at the hearing, Dr. Drabik admitted that each of the four different standards (CX-137, RX-303, RX-293, and RX-20) was consistent with Microsoft's proposed construction. Drabik Tr. 2343-50.

Motorola also uses a quotation from the '596 patent's provisional application as support for its proposed construction. Motorola claims that ¶ 32 of the provisional application, CX-171, states: "Each macroblock is 16x16 pixels." CX-706C (Drabik WS) at 366. In fact, earlier, that paragraph states: "The typical macroblock is 16x16 pixels." CX-171 at MOTM ITC 0016288, ¶ 32. The patent application also explains that the "illustrated embodiments are examples of the present invention and do not limit the scope of the invention." CX-171 at MOTM ITC 0016286, ¶ 15.

Moreover, the extrinsic evidence shows that "macroblock" does not always refer

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to16x16 pixels. For example, two separate 1991 submissions to the Moving Pictures Experts Group defined a macroblock as a 16x8 pixel region. RRX-69.0003-4; RRX-70.0005. A contemporaneous patent application stated that "a typical size for a macroblock **510** is eight pixels by eight pixels." RRX-117 at ¶ 8; RRX-117 at Fig. 5. When Dr. Drabik was confronted with these documents, he admitted that they described 16 x 8 and 8 x 8 pixel regions as macroblocks. *See* Drabik Tr. 2351-55, 2358-60.

2. "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" (claim 1)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" (claim 1)	choosing which mode, frame mode or field mode, to use in encoding or decoding a group of neighboring macroblocks	choosing to encode or decode a group of neighboring macroblocks in a frame mode or a field mode

The claim term "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" is the first step of independent method claim 1. JX-7 at col. 18, lns. 6-33.[66]

Motorola construes the term to mean "choosing which mode, frame mode or field mode, to use in encoding or decoding a group of neighboring macroblocks." Compls. Br. at 122. Microsoft construes the term to mean "choosing to encode or decode a group of neighboring macroblocks in a frame mode or a field mode." Resp. Br. at 183; RX-394 at 1.

[66] There is a typographical error in the claim term that is to be construed in the *parties' briefs and RX-394*. The claim term to be construed is "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode," and not "selecting to encode or decode a group of neighboring macroblocks in frame mode or a field mode." *See* Compls. Br. at 122; Resp. Br. at 182, 183, 186; RX-394 at 1.

As proposed by Motorola, the claim term "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" is construed to mean "choosing which mode, frame mode or field mode, to use in encoding or decoding a group of neighboring macroblocks."

The claim language is slightly ambiguous in that the "selecting" step could mean choosing between encoding and decoding, or choosing between a frame mode and a field mode.

However, the specification is instructive in clarifying this ambiguity. The '596 patent discloses:

> The present invention provides a method of adaptive frame/field (AFF) coding of digital video content comprising a stream of pictures or slices of a picture at a macroblock level. The present invention extends the concept of picture level AFF to macroblocks. In AFF coding at a picture level, each picture in a stream of pictures that is to be encoded is encoded in either frame mode or in field mode, regardless of the frame or field coding mode of other pictures that are to be coded. If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly. Conversely, if a picture is encoded in field mode, the two fields that make up an interlaced frame are coded separately. <u>The encoder determines which type of coding, frame mode coding or field mode coding, is more advantageous for each picture and chooses that type of encoding for the picture. The exact method of choosing between frame mode and field mode is not critical to the present invention and will not be detailed herein.</u>

JX-7 at col. 4, lns. 23-40 (emphases added).

In this description of an encoder, the specification of the '596 patent shows that the claim term "selecting" relates to the coding mode (*i.e.*, frame mode or field mode), and not to whether to encode or decode the claimed group of neighboring macroblocks.

Neither the claim nor the specification imposes any limitation on how a decoder chooses to decode a group of neighboring macroblocks.

Both parties agree that the word "selecting" means "choosing." Compls. Br. at 122; Resp. Br. at 183. Accordingly, consistent with the specification, the administrative law judge construes the term "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" to mean "choosing which mode, frame mode or field mode, to use in encoding or decoding a group of neighboring macroblocks."

3. "group of neighboring macroblocks" (claim 1)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"group of neighboring macroblocks" (claim 1)	*No construction necessary.* *If construed:* a collection of neighboring macroblocks	three or more adjacent macroblocks

The claim term "group of neighboring macroblocks" appears in each of the three method steps of independent claim 1. JX-7 at col. 18, lns. 6-33.

Motorola argues that no construction is necessary, or in the alternative, Motorola proposes the term to mean "a collection of neighboring macroblocks." Compls. Br. at 122. Microsoft construes the term to mean "three or more adjacent macroblocks." Resp. Br. at 179-80; RX-394 at 1.

As proposed by Motorola, the claim term "group of neighboring macroblocks" need not be construed because the word "group" has a plain and ordinary meaning.

The parties dispute whether ***two*** neighboring macroblocks may be a "group." There is no dispute between the parties about the ordinary meaning of the term "group,"

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and thus the claim term does not require a construction (*i.e.*, the term can be applied as is, based on its ordinary meaning).

"Group" is a word that has a common ordinary meaning to lay persons and persons of ordinary skill alike, *i.e.*, a collection of objects that can be treated as a unit or whole. *See, e.g.*, CX-177 at MOTM_ITC 0507070. The prepositional phrase "of neighboring macroblocks" serves its ordinary purpose of identifying what types of objects are in the group. None of the words of the term, alone or together, specifies the number of objects in the group, other than that there must be at least two, as implied by the use of the word "group" and the plural "macroblocks."

The '596 patent specification and the prosecution history supports this conclusion. Microsoft proposes the construction "three or more adjacent macroblocks" that would exclude the embodiment of the '596 patent that corresponds to the incorporated H.264 Standard, in which coding is performed on a pair (*i.e.*, a group of two) of macroblocks. It is improper to adopt a construction that would exclude the preferred embodiment. *See On-line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmBH*, 386 F.3d 1133, 1138 (Fed. Cir. 2004). Doing so would be in direct contradiction to the teaching of the '596 patent:

> The present invention relates to encoding and decoding of digital video content. More specifically, the present invention relates to frame mode and field mode encoding of digital video content at a macroblock level as used in the MPEG-4 Part 10 AVC/H.264 standard video coding standard.

JX-7 at col. 1, lns. 22-26 (emphasis added).

> Although this method of AFF encoding is compatible with and will be explained using the MPEG-4 Part 10 AVC/H.264 standard guidelines, it can be modified and used as best serves a particular standard or application.

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JX-7 at col. 4, lns. 54-57 (emphasis added).

Indeed, nothing in the '596 patent suggests an embodiment in which coding is performed on a group of three macroblocks. *See* Drabik Tr. 565; Mitzenmacher Tr. 1606-1608. The '596 patent teaches the H.264 Standard embodiment, operating on a group of two neighboring macroblocks (a "macroblock pair"), and an alternative embodiment, operating on a group of four or more macroblocks. JX-7 at col. 7, ln. 32-col. 8, ln. 51.

Moreover, teaching an embodiment in which a group has four or more macroblocks does not limit the '596 patent claims to that embodiment or otherwise exclude a macroblock pair from being the claimed group. *See, e.g.*, *Commonwealth Scientific*, 542 F.3d at1385 (describing interleaving of data in two-bit blocks does not mean that claims must be limited to interleave blocks consisting of at least two bits); *Epistar Corp. v. U.S. Int'l Trade Comm'n*, 566 F.3d 1321, 1337 (Fed. Cir. 2009) ("While the '718 patent describes a thicker layer as a 'substrate,' the Commission followed this court's precedent in declining to limit the construction of 'substrate' to that embodiment."). Claim 1 of the '596 patent does not quantify the term "group" to be limited to any particular number of objects.

The prosecution history of the '596 patent confirms that the ordinary meaning of "group" should apply. The inventors principally claimed and argued for patentability of a method involving "*at least two*" macroblocks encoded in frame mode and "*at least two*" macroblocks encoded in field mode. JX-8 ('596 Patent File History) at MOTM_ITC 0000439, 444-447. In other claims, the inventors referred to groups of "*more than two*" and "*four or more*" macroblocks. JX-8 at MOTM_ITC 0000441. The explicitly stated

(and different) qualifications of the number of macroblocks in these latter claims show that "group" is not limited as Microsoft proposes.

Subsequently, all of the claims were rejected in view of U.S. 5,504,430 ("Obikane"), in which frame or field mode was selected for macroblocks individually, allowing any number to be encoded in one mode or the other. JX-8 ('596 Patent File History) at MOTM_ITC 0000452-453; CX-115 at 3:12-21, 8:4-27, 9:62-67; CX-719C (Drabik RWS) at 9-10. The inventors amended their principal claim to clarify that frame or field mode was selected for a group of neighboring macroblocks (as opposed to an individual macroblock), which were also claimed to be arranged for processing into frame macroblocks or field macroblocks as a group. The amended claim did not quantify the number of macroblocks in the group, which was not germane to the issue raised by the Examiner. Indeed, the inventors cancelled their claims to groups of "more than two" and "four or more." JX-8 at MOTM_ITC 0000466-468.

Microsoft argues that "[t]he ['596] patent and its file history are clear that a 'group of neighboring macroblocks' is more than two macroblocks." Resp. Br. at 179-80. Microsoft contends that the term "a group of neighboring macroblocks" was given special meaning and was limited during prosecution to "groups of more than two macroblocks." *Id.* at 179-82. Microsoft's argument is rejected.

Lexicography or disavowal must be clear and unmistakable, and the inventors' use of the terms "group" and "pair" in the patent's description of different embodiments does not amount to a redefinition or disavowal of the ordinary meaning of "group." *Thorner v. Sony Computer Entm't*, 2012 WL 280657, at *2-5 (Fed. Cir. Feb. 1, 2012) (ordinary meaning of "attached" not redefined to mean attached to an outer surface where

the term was used exclusively to describe such embodiments and "embedded" used exclusively to describe embodiments affixed to an internal surface). "Pair" is a narrower term than "group," and there is nothing inconsistent about using "pair" to refer to a group of only two macroblocks. Using "pair" this way does not mean "group" automatically means more than two, as opposed to its broader plain meaning – a collection. *Id.* at *4. Also, consistent with the ordinary meaning of "group" as an unquantified term, the specification adds a qualifier when it refers to a specific number. *See, e.g.*, JX-7 at col. 8, lns. 43-46 ("However, if a *group of four macroblocks* (902), for example, is to be encoded in field mode..."). The term "group" in claim 1 has no such qualification, and it would be improper to read one in from the specification. *Thorner*, 2012 WL 280657, at *4.

Microsoft also argues that there was a prosecution history disclaimer in view of U.S. Patent No. 5,504,430 ("Obikane"). Resp. Br. at 180-82. However, Obikane does ***not*** disclose coding a group of neighboring macroblocks, such as FIG. 7 (a pair of macroblocks) or FIG. 10 (a group of four macroblocks). Instead, Obikane discloses coding individual macroblocks. CX-115 at 3:12-21, 7:22-8:27, 9:62-67; CX-719C (Drabik) 9. Microsoft takes a few words in the amendment out of context and ignores the other changes made. It points to no argument disclaiming a group of two macroblocks, and mischaracterizes the Examiner's reasons for allowance, which did not include "group" in the terms the Examiner emphasizes in italics. JX-8 ('596 Patent File History) at MOTM_ITC 0000488-89; Mitzenmacher Tr. 1616-1628. When viewed as a whole, the claim amendments confirm that the patentee was not disclaiming macroblock pairs. *Compare* JX-8 at MOTM_ITC 0000466 amendments *with* JX-7 col. 7, ln. 32-col. 8, ln.

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24. For example, the same amendment added "wherein said frame macroblocks and said field macroblocks are the *same size*." JX-8 at MOTM_ITC 0000466. The "same size" discussion in the specification is specifically in connection with macroblock pairs. JX-7 at col. 7, lns. 43-49.

4. "jointly processing two fields in said group of neighboring macroblocks" (claim 1)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"jointly processing two fields in said group of neighboring macroblocks" (claim 1)	for each macroblock within the group of neighboring macroblocks, processing samples from the two fields of a coded frame	processing both fields "in said group of neighboring macroblocks" together

The claim term "jointly processing two fields in said group of neighboring macroblocks" appears in the first sub-step of the third step of independent claim 1. JX-7 at col. 18, lns. 6-33.[67]

Motorola construes the term to mean "for each macroblock within the group of neighboring macroblocks, processing samples from the two fields of a coded frame." Compls. Br. at 125. Microsoft construes the term to mean "processing both fields 'in said group of neighboring macroblocks' together." RX-394 at 2.

As proposed by Motorola, the claim term "jointly processing two fields in said group of neighboring macroblocks" is construed to mean "for each macroblock within the group of neighboring macroblocks, processing samples from the two fields of a coded frame."

[67] The term also appears in non-asserted claims. JX-7.

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The term "processing" in the disputed claim term "jointly processing two fields in said group of neighboring macroblocks," refers to the processing that occurs if the claimed "group of neighboring macroblocks" is in frame mode.

The '596 patent specification makes this clear:

> The present invention provides a method of adaptive frame/field (AFF) coding of digital video content comprising a stream of pictures or slices of a picture at a macroblock level. The present invention extends the concept of picture level AFF to macroblocks. In AFF coding at a picture level, each picture in a stream of pictures that is to be encoded is encoded in either frame mode or in field mode, regardless of the frame or field coding mode of other pictures that are to be coded. <u>If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly</u>. Conversely, if a picture is encoded in field mode, the two fields that make up an interlaced frame are coded separately. The encoder determines which type of coding, frame mode coding or field mode coding, is more advantageous for each picture and chooses that type of encoding for the picture. The exact method of choosing between frame mode and field mode is not critical to the present invention and will not be detailed herein.
>
> * * *
>
> To understand macroblock level AFF coding, a brief overview of picture level AFF coding of a stream of pictures will now be given. A frame of an interlaced sequence contains <u>two fields, the top field and the bottom field</u>, which are interleaved and separated in time by a field period. The field period is half the time of a frame period. <u>In picture level AFF coding, the two fields of an interlaced frame can be coded jointly or separately. If they are coded jointly, frame mode coding is used.</u> Conversely, if the two fields are coded separately, field mode coding is used.
>
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> In the first case, AFF coding is performed on a single macroblock. If the macroblock is to be encoded in frame mode, the two fields in the macroblock are encoded jointly. Once encoded as a frame, the macroblock can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm.
>
> * * *
>
> FIG. 7 illustrates an exemplary pair of macroblocks (700) that can be used in AFF coding on a pair of macroblocks according to an embodiment of the present invention. If the pair of macroblocks (700) is to be encoded in frame mode, the pair is coded as two frame-based macroblocks. In each macroblock, the two fields in each of the macroblocks are encoded jointly. Once encoded as frames, the macroblocks can be further divided into the smaller blocks of FIGS. 3a-f for use in the temporal prediction with motion compensation algorithm.

JX-7 at col. 4, lns. 23-40; col. 6, lns. 45-54; col. 7, lns. 5-10; col. 7, lns. 50-59 (emphases added).

As disclosed in the specification portions cited above, the '596 patent repeatedly uses the term "jointly" to refer to an action on both the top and bottom fields of a frame in frame mode. "If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly." "In picture level AFF coding, the two fields of an interlaced frame can be coded jointly or separately. If they are coded jointly, frame mode coding is used." "In each macroblock, the two fields in each of the macroblocks are encoded jointly."

Thus, the specification makes clear that the claim term "jointly processing two fields in said group of neighboring macroblocks" refers to processing each macroblock in the group during encoding or decoding by processing the top and bottom field samples

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that make up that macroblock.

5. "separately processing two fields of said group of neighboring macroblocks" (claim 1)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"separately processing two fields of said group of neighboring macroblocks" (claim 1)	for each macroblock within the group of neighboring macroblocks, processing samples from a single field	processing each of the two fields in "said group of neighboring macroblocks" without involving the other field

The claim term "separately processing two fields of said group of neighboring macroblocks" appears in the second sub-step of the third step of independent claim 1. JX-7 at col. 18, lns. 6-33.[68]

Motorola construes the term to mean "for each macroblock within the group of neighboring macroblocks, processing samples from a single field." Compls. Br. at 125-26. Microsoft construes the term to mean "processing each of the two fields in 'said group of neighboring macroblocks' without involving the other field." RX-394 at 2.

As proposed by Motorola, the claim term "separately processing two fields of said group of neighboring macroblocks" is construed to mean "for each macroblock within the group of neighboring macroblocks, processing samples from a single field."

The term "processing" in the disputed claim term "separately processing two fields of said group of neighboring macroblocks," refers to the processing that occurs if the claimed "group of neighboring macroblocks" is in field mode.

The '596 patent specification makes this clear:

[68] The term also appears in non-asserted claims. JX-7.

The present invention provides a method of adaptive frame/field (AFF) coding of digital video content comprising a stream of pictures or slices of a picture at a macroblock level. The present invention extends the concept of picture level AFF to macroblocks. In AFF coding at a picture level, each picture in a stream of pictures that is to be encoded is encoded in either frame mode or in field mode, regardless of the frame or field coding mode of other pictures that are to be coded. If a picture is encoded in frame mode, the two fields that make up an interlaced frame are coded jointly. Conversely, if a picture is encoded in field mode, the two fields that make up an interlaced frame are coded separately. The encoder determines which type of coding, frame mode coding or field mode coding, is more advantageous for each picture and chooses that type of encoding for the picture. The exact method of choosing between frame mode and field mode is not critical to the present invention and will not be detailed herein.

* * *

To understand macroblock level AFF coding, a brief overview of picture level AFF coding of a stream of pictures will now be given. A frame of an interlaced sequence contains two fields, the top field and the bottom field, which are interleaved and separated in time by a field period. The field period is half the time of a frame period. In picture level AFF coding, the two fields of an interlaced frame can be coded jointly or separately. If they are coded jointly, frame mode coding is used. Conversely, if the two fields are coded separately, field mode coding is used.

* * *

However, if the pair of macroblocks (700) is to be encoded in field mode, it is first split into one top field 16 by 16 pixel block (800) and one bottom field 16 by 16 pixel block (801), as shown in FIG. 8. The two fields are then coded separately.

* * *

> However, if a group of four macroblocks (902), for example, is to be encoded in field mode, it is first split into one top field 32 by 16 pixel block and one bottom field 32 by 16 pixel block. The two fields are then coded separately.

JX-7 at col. 4, lns. 23-40; col. 6, lns. 45-54; col. 7, lns. 60-64; col. 8, lns. 43-46 (emphases added).

As disclosed in the specification portions cited above, the '596 patent repeatedly uses the term "separately" to refer to an action on both the top and bottom fields of a frame in field mode. For example, the specification describes that when encoded in field mode, a pair of macroblocks will be split into a "top field 16 16 pixel block " and a "bottom field 16 16 pixel block, " and then the two fields are "coded separately." Similarly, describing an example of a group of four macroblocks encoded in field mode, the specification discloses that the group of macroblocks will be split into top and bottom fields and then the two fields are coded separately.

6. "said frame or field macroblocks can be divided into blocks, each of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels" (claim 2)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"said frame or field macroblocks can be divided into blocks, each of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels" (claim 2)	the frame macroblocks or field macroblocks can be divided into each of the following block sizes: 16 16, 16 by 8 pixels, 8 by16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels	each of said block comprises one or more of the following alternatives: 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels

The claim term "said frame or field macroblocks can be divided into blocks, each

of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixe ls, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels" appears in dependent claim 2. JX-7 at col. 18, lns. 34-38.[69]

Motorola construes the term to mean "the frame macroblocks or field macroblocks can be divided into each of the following block sizes: 16 16, 1 6 by 8 pixels, 8 by16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels." Compls. Br. at 126. Microsoft construes the term to mean "each of said block comprises one or more of the following alternatives: 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels." RX-394 at 3.

As proposed by Motorola, the claim term "said frame or field macroblocks can be divided into blocks, each of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels" is construed to mean "the frame macroblocks or field macroblocks can be divided into each of the following block sizes: 16 16, 16 by 8 pixels, 8 by16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels."

Claim 2 is a method in which frame macroblocks or field macroblocks can be divided into each of the block sizes listed, *i.e.*, 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels.

The '596 patent specification discloses:

> AFF coding on macroblock pairs will now be explained. AFF coding on macroblock pairs will be occasionally referred to as pair based AFF coding. A comparison of the block sizes in FIGS. 6a-d and in <u>FIGS. 3a-f</u> show that a macroblock encoded in field mode can be divided into

[69] The term also appears in non-asserted claims. JX-7.

> fewer block patterns than can a macroblock encoded in frame mode. The block sizes of 16 by 16 pixels, 8 by 16 pixels, and 8 by 4 pixels are not available for a macroblock encoded in field mode because of the single parity requirement. This implies that the performance of single macroblock based AFF may not be good for some sequences or applications that strongly favor field mode coding. In order to guarantee the performance of field mode macroblock coding, it is preferable in some applications for macroblocks that are coded in field mode to have the same block sizes as macroblocks that are coded in frame mode. This can be achieved by performing AFF coding on macroblock pairs instead of on single macroblocks.

JX-7 at col. 7, lns. 32-49 (emphases added).

The specification states that the problem with AFF coding on a single macroblock is that the block sizes of 16x16 pixels and 8x16 pixels "are not available for a macroblock encoded in field mode because of the single parity requirement." The specification explains that with the invention of AFF coding on macroblock pairs (where the field macroblock is the same size as the frame macroblock), the field macroblock can further be divided into each of the block sizes of FIGS. 3a-f. *Id.* The specification emphasized this benefit, explaining that "it is preferable in some applications for macroblocks that are coded in field mode to have the same block sizes as macroblocks that are coded in frame mode."

B. Infringement Analysis of the '596 Patent

Microsoft argues that it does not directly infringe the '596 patent based on its testing of the Xbox with certain test video clips. Microsoft asserts that Motorola failed to show that Microsoft's test clips possessed the properties necessary to invoke the accused functionality in the allegedly infringing manner and so its evidence of direct infringement is insufficient. Resp. Br. at 177-78. Microsoft's argument is rejected.

Microsoft's assertions that it has never directly infringed the '596 patent ignore its admitted use of the Xbox to decode MBAFF-encoded digital video using the Main and High Profiles of the H.264 Standard. CX-635C at 14. It further ignores Mr. Wu's admissions that Microsoft tested the MBAFF decoding feature of the Xbox. CX-646C (Wu Dep. Tr.) at 23, 43-44. *See* Compls. Br. 127-28. Further, Mr. Wu testified that the bitstreams tested cover the MBAFF feature (CX-646C (Wu Dep. Tr.) at 38, 43-44); Microsoft's test document labels bitstreams as "MB AFF," and several are identified as using "*all combinations of frame and field macroblock pairs*." CX-181C at MS-Moto_752_737906-07.

Microsoft also argues that Motorola improperly relies on the H.264 specification (CX-29) as evidence of infringement. Resp. Br. at 178. Microsoft argues that use of the H.264 Standard as evidence is improper because it only prescribes inputs and outputs. *Id.* However, the Standard requires that "[e]ach profile specifies a subset of algorithmic features and limits that *shall be supported by all decoders conforming to that profile.* CX-29 at 286 (emphasis added). Microsoft does not deny that they practice the H.264 Standard and that the Standard requires this.

1. Accused Products

Motorola argues that at least the following products are accused products: all versions and configurations of the Microsoft Xbox 360 console imported into the United States and/or sold after importation into the United States on or after December 17, 2010, including but not limited to the Xbox 360 4 GB Console and the Xbox 360 250 GB Console. Compls. Br. at 127 citing CX-706C (Drabik WS) at 6, 381.

Microsoft does not dispute this.

2. Direct Infringement

For the reasons set forth below, Motorola has shown that Microsoft's accused products infringe all asserted claims of the '596 patent.

Claim 1

The preamble of independent method claim 1 recites:

> **A method of encoding or decoding digital video content, said digital video content comprising a stream of pictures which can each be intra, predicted, or bi-predicted pictures, each of said pictures comprising macroblocks, said method comprising the steps of:**

Motorola has established that this claim limitation is satisfied.

The claim term "macroblock" has been construed to mean "a rectangular group of pixels."

The preamble recites "encoding or decoding" in the alternative, requiring either encoding *or decoding*. Mitzenmacher Tr. 1589. The Xbox decodes digital video content. *Id.* at 1588-89. Specifically, in compliance with the H.264 Standard, the Xbox decodes digital video content comprising a stream of pictures which can be intra, predicted, or bi-predicted pictures, each of said pictures comprising macroblocks. The H.264 Standard specifies two coding types, intra coding and inter coding (which includes predictive and bi-predictive). CX-29 at 3, 129-174; CX-706C (Drabik WS) at 396. The H.264 Standard further specifies that a picture comprises macroblocks. CX-29 at 24 ("Pictures are divided into slices. A slice is a sequence of macroblocks, or, when macroblock-adaptive frame/field decoding is in use, a sequence of macroblock pairs."); *see* CX-706C (Drabik WS) at 396.

Relevant operations for decoding digital video content according to the preamble

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are found throughout Microsoft's source code. In particular, [ ] decodes intra macroblocks within an intra picture, predicted picture, or bi-predicted picture. CX-334C at MS-MOTO_752_0005129630-31; CX-706C (Drabik WS) at 396. Dr. Drabik's operation of the Xbox also confirmed this operation. CX-706C (Drabik WS) at 385-396.

Microsoft does not dispute that the Xbox operates in the above manner. Instead, it argues that the Xbox does not decode "macroblocks" because it processes [ ] and not pixels. However, the Xbox does decode macroblocks when it processes [ ] Microsoft's own documents show that the Xbox engineers use the words [ ] interchangeably and even in combination [ ]. CX-799 at 10. Microsoft's expert admitted that luma corresponds to the brightness component of a pixel, and chroma corresponds to its color. Mitzenmacher Tr. 1590-1591. Nothing in the specification of the '596 patent distinguishes "pixels" from their luma and chroma components. *Id.* at 1591-1592. Moreover, claim 1 does not require color pixels. *Id.* at 1598. In a monochrome picture, each pixel is represented only with luma. *Id.* at 1596-1597. The decoder therefore does not need to process chroma components in order to process a "pixel" of a monochrome picture. Microsoft concedes that the Xbox is capable of decoding monochrome pictures. *Id.*

The first step of claim 1 recites:

> **selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode;**

Motorola has established that this claim limitation is satisfied.

The claim term "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" has been construed to mean "choosing which mode, frame mode or field mode, to use in encoding or decoding a group of neighboring macroblocks." Further, the undersigned determined that the claim term "group of neighboring macroblocks" need not be construed.

In compliance with the H.264 Standard, when the Xbox decodes an MBAFF-encoded video, it selects to decode a group of neighboring macroblocks in a frame mode or a field mode. CX-706C (Drabik WS) at 398-410; Drabik Tr. 568. For example, a group of neighboring macroblocks can be a macroblock pair. The H.264 Standard states that:

> When macroblock-adaptive frame/field decoding is in use, the picture is partitioned into slices containing an integer number of macroblock pairs as shown in Figure 6-8. Each macroblock pair consists of two macroblocks.

CX-29 at 25. Figure 6-8 of the H.264 Standard shows the partitioning of a picture into macroblock pairs (*Id.*):

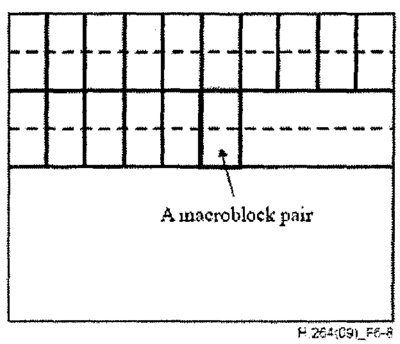

Figure 6-8 – Partitioning of the decoded frame into macroblock pairs

The Main and High profiles of the H.264 Standard require a decoder to be able to read an "mb_field_decoding_flag" from the bitstream. Wang Tr. 399-400. According to the

H.264 Standard, each macroblock pair has an associated mb_field_decoding_flag that the decoder reads when choosing which mode (frame or field), to use in the decoding process. CX-29 at 96. Microsoft admits that the Xbox supports the MBAFF decoding process defined in the H.264 Standard. CX-646C (Wu Dep. Tr.) at 21-22. Mr. Wu testified that the decoder in Microsoft's Xbox implements the decoding process for frame and field macroblocks as it is defined in the H.264 Standard. CX-646C (Wu Dep. Tr.) at 29-30, 32-33.

Microsoft's source code confirms that the Xbox selects to decode a group of neighboring macroblocks in a frame mode or a field mode. The Xbox decoder [

] respectively, [

] This variable indicates to later functions to decode a picture as an MBAFF picture. CX-330C at MS-MOTO_752_0005129702; CX-706C (Drabik WS) at 402-405; Mitzenmacher Tr. 1599-1600.

For each macroblock pair, the [

] Mitzenmacher Tr. 1600. For example, [

] CX-334C at MS-MOTO_752_0005129619. The Xbox then selects (chooses) to decode in frame mode or field mode [ ] throughout the decoding process. *See, e.g.*, CX-

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234C at MS-MOTO_752_0000980390; CX-706C (Drabik WS) at 405-409. Dr. Drabik's operation of the Xbox confirmed that the Xbox performs the "selecting" step. The screenshots (CX-193) he analyzed show the status of the MBAFF flags and that the picture contains frame macroblock pairs and field macroblock pairs. By playing the video, Dr. Drabik confirmed that the Xbox decodes such pairs in a frame mode or field mode [ ] CX-706C (Drabik WS) at 385-395, 401.

Microsoft does not dispute the above-discussed operation of the Xbox. Instead, it argues that a pair of macroblocks is not a "group of neighboring macroblocks" relying on its proposed claim construction. However, the undersigned determined that the claim term "group of neighboring macroblocks" need not be construed to have anything other than its ordinary meaning, and thus the claimed "group of neighboring macroblocks" can include two macroblocks. *See* FIG. 7 embodiment of the '596 patent.

Microsoft further argues that the claimed "selecting" is done only by an encoder, and that the Xbox decoder does no selecting because it just follows instructions from the encoder. This is not correct. First, the claim recites "selecting to encode ***or decode***…in a frame mode or field mode." Second, the Xbox decoder does not simply follow instructions. As discussed above, the Xbox decoder [

] and [ ] It then selects (chooses) which parts of the code to execute [ ] For example, the Xbox decoder selects whether to [ ] in frame mode or in field mode [

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] CDX-2-10 to 12; CX-706C (Drabik WS) at 409.

Microsoft's expert agreed that [ ] determines some of the code being run in the process of decoding." Mitzenmacher Tr. 1601.

The second step of claim 1 recites:

> **arranging said group of neighboring macroblocks for processing into frame macroblocks or field macroblocks according to the selected one of said frame mode or said field mode; and**

Motorola has established that this claim limitation is satisfied.

The undersigned determined that the claim term "group of neighboring macroblocks" need not be construed.

In compliance with the H.264 Standard, the Xbox arranges the group of neighboring macroblocks for processing into frame macroblocks or field macroblocks according to the selected one of said frame mode or said field mode. CX-706C (Drabik WS) at 410-416. The H.264 Standard specifies as part of the picture construction process that macroblocks of macroblock pairs are arranged to form a picture. CX-29 at 191-192. Equation 8-411 describes how the lines of each field macroblock in a pair are spread out vertically so that lines from top and bottom field macroblocks are interleaved. Equation 8-412 describes how lines of each frame macroblock in a pair are moved into adjacent line locations of frame macroblocks in the reconstructed picture.[70] *Id.* By arranging the lines on the basis of whether the macroblocks are frame macroblocks or field macroblocks, the H.264 Standard requires performance of this step.

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[70] The H.264 Standard also specifies equations for arranging the corresponding chroma samples of each pixel in a macroblock. *See* CX-29 at 192 (8-415 and 8-416); Drabik Tr. 657.

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This operation is confirmed in Microsoft's source code. For example, [ ] perform the "arranging" required by this claim step. *See* CX-294C, CX-309C, CX-310C, and CX-312C. Through these processes, the field macroblock pairs are arranged (ordered) into frame macroblocks by interleaving top and bottom field lines of the macroblock pair to form frame macroblocks in the picture construction process. The frame macroblock pairs are arranged (ordered) into frame macroblocks by moving adjacent lines of the macroblocks into adjacent lines of frame macroblocks in the reconstructed picture. In both cases, the arranging is done in the source code [ ] CX-706C (Drabik WS) at 411-416. Dr. Drabik's operation of the Xbox confirmed that the Xbox performs the "arranging" step. The screenshots he analyzed (CX-193) show macroblocks that were received by the Xbox as frame macroblock pairs or field macroblock pairs, and playing the video confirmed that the Xbox arranges such pairs into frame macroblocks [ ] CX-706C (Drabik WS) at 385-395, 411.

Microsoft does not dispute that the Xbox reshuffles (orders) according to [ ] Instead, Microsoft makes a series of claim construction arguments that attempt to limit the "arranging" step to the encoding direction only. Microsoft argues that there is no "arranging" of a group of neighboring macroblocks in the Xbox because the input to the "arranging" step is two frame or field macroblocks, not a pair of macroblocks. However, the Xbox receives a *pair* of frame macroblocks or a *pair* of field macroblocks. Dr. Mitzenmacher admitted that the input to the MBAFF decoding process is a pair of frame macroblocks or a pair of field macroblocks. *See, e.g.,* Mitzenmacher Tr. 1635;

RRX-007C at 69 ("...the Xbox receives a pair of frame macroblocks or a pair of frame [sic] macroblocks."); RRDX-26 (depicting a pair of frame macroblocks or a pair of field macroblocks as the input to the MBAFF decoding process). Both Dr. Mitzenmacher and Mr. Wu admit that the mb_field_decoding_flag in the input bitstream refers to a *pair* of macroblocks. Mitzenmacher Tr. 1606; CX-646C (Wu Dep. Tr.) at 29-30. The Xbox's [ ] discussed above then arrange these *pairs* into frame macroblocks.

Microsoft also argues that there is no "arranging" of a group of neighboring macroblocks in the Xbox because the output of the "arranging" step is a "pair of macroblocks," not "frame macroblocks." However, the '596 patent discusses that a "macroblock pair" can be two frame macroblocks. *See, e.g.,* JX-7 at col. 16, lns. 35-41 ("bottom-frame macroblock (176) of the above macroblock pair (170)"); col. 16, lns. 59-65 (to "top-frame macroblock (175) of the left macroblock pair (172)"). Thus, the "pair of macroblocks" illustrated on the left side of FIG. 8 is two frame macroblocks: a top frame macroblock and a bottom frame macroblock. FIG. 8 illustrates that the "pair of macroblocks" is actually two frame macroblocks by using a bold line to separate the top frame macroblock of the pair from the bottom frame macroblock of the pair. *See, e.g.,* CDX-2-22 (emphasizing bold line).

Microsoft further argues that there is no "arranging" of a group of neighboring macroblocks in the Xbox because the Xbox does not arrange "into field macroblocks." However, the claim language is "arranging said group ... into frame macroblocks ***or*** field macroblocks." The claim does not require arranging the group into frame macroblocks ***and*** arranging the group into field macroblocks. As discussed above, this step is performed when the Xbox's [ ] arrange a pair of field macroblocks into

frame macroblocks or a pair of frame macroblocks into frame macroblocks.

Finally, Microsoft argues that there is no "arranging" of the group of neighboring macroblocks in the Xbox because the Xbox does not arrange "according to the selected one of said frame mode or said field mode." However, as discussed above, the Xbox's [ ] order the group of neighboring macroblocks differently [ ]

The third step of claim 1 recites:

> **encoding or decoding said frame macroblocks or said field macroblocks, wherein, the step of arranging said group of neighboring macroblocks for processing into frame macroblocks or field macroblocks includes the step of:**
>
> > **in frame mode, jointly processing two fields in said group of neighboring macroblocks, said group of neighboring macroblocks being divided into frame macroblocks, and each of said frame macroblocks including both top and bottom field pixels;**
> >
> > **in said field mode, separately processing two fields of said group of neighboring macroblocks, said group of neighboring macroblocks being split into field macroblocks, and each of said field macroblocks including either top or bottom field pixels, and wherein said frame macroblocks and said field macroblocks are the same size.**

Motorola has established that this claim limitation is satisfied.

"encoding or decoding"

In compliance with the H.264 Standard, the Xbox decodes the frame or field macroblocks. CX-706C (Drabik WS) at 416-420. According to the H.264 Standard, each macroblock of the macroblock pair is decoded in a frame mode or field mode. CX-

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29 at 109. Mr. Wu confirmed that the Xbox decodes a frame or field macroblock pair according to the H.264 Standard. CX-646C (Wu Dep. Tr.) at 31, 33.

Microsoft's source code further confirms the operation of the Xbox decoder. Decoding operations can be found throughout Microsoft's source code. For example, [ ] to decode intra-coded frame or field macroblocks. CX-334C at MS-MOTO_752_0005129630-31, MS-MOTO_752_0005129627-28; CX-706C (Drabik WS) at 417-20. Dr. Drabik's operation of the Xbox confirmed that the Xbox decodes the frame or field macroblocks. CX-706C (Drabik WS) at 385-95, 417.

Microsoft argues that there is no "encoding or decoding said frame macroblocks or said field macroblocks" because the Xbox operates [ ] instead of pixels. As discussed above, the Xbox decodes "macroblocks" by decoding the [ ]

"in frame mode, jointly processing"

The claim term "jointly processing two fields in said group of neighboring macroblocks" has been construed to mean "for each macroblock within the group of neighboring macroblocks, processing samples from the two fields of a coded frame."

In compliance with the H.264 Standard, in frame mode, the Xbox jointly processes two fields in the group of neighboring macroblocks. CX-706C (Drabik WS) at 420-34. During the H.264 decoding process, each macroblock of a frame macroblock pair has samples from two fields and those samples are processed together. CX-29 at 8. During processing, the frame macroblock pair is in the state of being divided into frame

macroblocks. *Id.* ("**frame macroblock pair**: A *macroblock pair* decoded as two *frame macroblocks*"). Each frame macroblock includes both top and bottom field pixels. *Id.* ("**frame macroblock:** A *macroblock* representing samples from the two *fields* of a *coded frame*."). The top macroblock is decoded first, followed by the bottom macroblock.[71]

The Xbox source code confirms that the Xbox jointly processes both fields in the group of neighboring macroblocks. For example, after a macroblock pair is arranged into frame macroblocks, each frame macroblock contains pixels from both fields. Each frame macroblock is then processed in a filtering step called "deblocking." In the Xbox, this processing occurs [ ] [ ] Mitzenmacher Tr. 1646. [ ] CX-234C at MS-MOTO_752_0000980390-394, MS-MOTO_752_0000980402-403. CX-706C (Drabik WS) at 422-26.

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[71] The '596 patent explains that with AFF coding on macroblock pairs, the top macroblock is coded first followed by the bottom macroblock. JX-7 at col. 8, lns. 20-24. The Xbox source code decodes macroblock pairs in the same way (*i.e.*, top macroblock first followed by bottom macroblock). *See, e.g.*, CX-334C at MS-MOTO_752_0005129630-31 [ ] CX-706C (Drabik WS) at 418-19.

The Xbox source code also jointly processes both fields in the group of neighboring macroblocks when performing prediction of a macroblock in intra 16 16 mode. After a macroblock pair is arranged into frame macroblocks, each frame macroblock can then be processed in a prediction step called "DC" prediction. In the Xbox, this occurs in [ ] In this [

] Drabik Tr. 650-651; CX-331C at MS-MOTO_752_0005129488-89; CX-706C (Drabik WS) at 428-429. Dr. Drabik's operation of the Xbox confirmed that the Xbox performs the "jointly processing" of claim 1. Dr. Drabik's analysis of the screenshots (CX-193) showed that the picture contained frame macroblock pairs that were predicted in intra 16 16 mode. In order to decode the frame macroblock pairs, the Xbox had to perform "jointly processing." CX-706C (Drabik WS) at 385-395, 422.

"in said field mode, separately processing"

The claim term "separately processing two fields of said group of neighboring macroblocks" has been construed to mean "for each macroblock within the group of neighboring macroblocks, processing samples from a single field."

The claim language recites that "arranging ... for processing ... includes the ***step*** of." This language refers to a single "step," indicating that only one of "jointly processing..." or "separately processing..." is required. In any event, the Xbox also performs "separately processing." In compliance with the H.264 Standard, in field mode, the Xbox separately processes two fields of the group of neighboring macroblocks.

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During the H.264 decoding process, each macroblock of a field macroblock pair has samples from only a single field and those samples are processed separately. CX-29 at 8. During processing, the field macroblock pair is in the state of being split into field macroblocks. *Id.* ("**field macroblock pair**: A *macroblock pair* decoded as two *field macroblocks*."). Each of the field macroblocks includes either top or bottom field pixels. *Id.* ("**field macroblock**: A *macroblock* containing samples from a single *field*."). The top macroblock is decoded first, followed by the bottom macroblock.

The Xbox source code confirms that the Xbox separately processes each field in the group of neighboring macroblocks. In the Xbox, this occurs in [

] Mitzenmacher Tr. 1646. [

] CX-706C (Drabik WS) at 431. Dr. Mitzenmacher admits that for a field macroblock, [

] Mitzenmacher Tr. 1645. [

] separately [

] CX-234C at MS-MOTO_752_0000980390-394; MS-MOTO_752_0000980402; CX-706C (Drabik WS) at 430-31.

The Xbox source code also separately processes both fields in the group of neighboring macroblocks when performing prediction of a macroblock in intra 16 16

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mode. [

] CX-331C at MS-MOTO_752_0005129488-89; CX-706C (Drabik WS) at 429-30.

Claim 2

Dependent claim 2 recites:

> **The method of claim 1, wherein said frame or field macroblocks can be divided into blocks, and each of said block comprises 16x16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels.**

Motorola has established that the limitations of claim 2 are satisfied.

The claim term "said frame or field macroblocks can be divided into blocks, each of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels" has been construed to mean "the frame macroblocks or field macroblocks can be divided into each of the following block sizes: 16 16, 16 by 8 pixels, 8 by16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels."

In compliance with the H.264 Standard, the Xbox must be able to decode macroblocks that have been partitioned into each of the seven block sizes 16 16 pixels, 16 8 pixels, 8 16 pixels, 8 8 pixels, 8 4 pixels, 4 8 pixels, or 4 4 pixels. CX -706C (Drabik WS) at 434-36, 439. The H.264 Standard states that: "Macroblocks or sub-

macroblocks may be partitioned, and the partitions are scanned for inter prediction as shown in FIG. 6-9." CX-29 at 26. FIG. 6-9 shows that the frame macroblocks or field macroblocks can be divided into each of the seven block sizes. CX-29 at 26; *see also* CX-29 at 105-07.

The Xbox source code includes functions that operate on each of the seven block sizes. Examples of operating on different block sizes are found throughout the source code. One such example is the file [ ] (CX-328C). CX-706C (Drabik WS) at 436. In addition, Dr. Drabik's operation of the Xbox confirmed that the [ ] CX-706C (Drabik WS) at 385-95; Drabik Tr. 662-664; 666.

3. Indirect Infringement

Motorola has not shown that Microsoft's accused products indirectly infringe all asserted claims of the '596 patent.

Motorola argues that Microsoft induces and contributes to the infringement as a result of the direct infringement by users of the Xbox (including Microsoft when it tests the Xbox devices). Compls. Br. at 128-29.

Microsoft argues that Motorola has not established certain required elements of induced infringement and contributory infringement. Resp. Br. at 176-77.

Inducement requires specific intent to encourage another's infringement. *Ricoh,* 550 F.3d at 1341. Generic product usage instructions do not establish intent because the relevant question is whether "instructions teach *an infringing use* of the device such that we are willing to infer from those instructions an affirmative intent to infringe the

patent." *Vita-Mix*, 581 F.3d at 1329 n.2 (emphasis added).

Microsoft does not instruct its customers to use the Xbox to watch H.264 interlaced content. Motorola points to Microsoft's generic product usage instructions, including passages showing how Xbox connects to a TV. CX-706C (Drabik WS) at Q448, Q912 (citing CX-182). These instructions do not instruct users to play video that invokes the accused features. RRX-7C (Mitzenmacher RWS) at 87-88, 203-204. Motorola also relies on a Microsoft website that references Xbox's ability to decode H.264 video. CX-706C (Drabik WS) at Q449, 913 (citing CX-179). That website describes H.264 in general, but not the interlaced H.264 content at issue here. RRX-7C (Mitzenmacher RWS) at 88-89, 204-205.

Motorola's allegation of contributory infringement fails because Xbox has substantial non-infringing uses. *Vita-Mix*, 581 F.3d at 1327-1328. None of Xbox's uses that were discussed during the investigation uses the accused features, including video games, (RX-386C (Thumpudi WS) at 2-3), non-H.264 video formats, (RRX-7C (Mitzenmacher RWS) at 88-89, 204-205, citing CX-179), and progressive H.264 content. RX-386C (Thumpudi WS) at 3.

C. Validity of the '596 Patent

1. RX-18 ("the Puri article"); RX-20 ("MPEG-4 draft specification"); RX-332 ("the '878 patent"); and RX-294 ("VCEG-N76")

For the reasons set forth below, Microsoft has shown by clear and convincing evidence that independent claim 1 of the '596 patent is invalid. However, Microsoft has not shown by clear and convincing evidence that dependent claim 2 of the '596 patent is invalid.

Claim 1

Each of the references RX-18, RX-20, RX-332, and RX-294, anticipates claim 1 of the '596 patent. Each qualifies as a printed publication under Section 102(a) or 102(b). *See* JX-11 (Joint Stipulation), ¶ 9.

Microsoft argues that its expert, Dr. Orchard, explained how each prior art reference discloses every limitation of claim 1, and other than the "macroblock" element, Motorola does not dispute this disclosure. Resp. Br. at 188 (citing Compls. P.H. Br. at 152-53). Motorola's post-hearing brief confirms this. Compls. Br. at 150-58.

RX-20 (MPEG-4 draft specification) discloses the preamble by describing digital video coding and decoding method; first step: "selecting to encode or decode … in frame mode or field mode" by describing a method that selects between frame mode and field mode; second step: "arranging said group of neighboring macroblocks …" by its disclosure of arranging four 8x8 macroblocks; third step: "encoding or decoding said frame macroblocks or said field macroblocks"; third step:"wherein, the step of …"; first sub-step of third step: "in frame mode, jointly processing …"; second sub-step of third step: "in field mode, separately processing …"; second sub-step of third step:"wherein said frame macroblocks …". RX-316C (Orchard WS) at 20-28.

Likewise, RX-18 (Puri article) discloses the preamble and each of the three claim steps of claim 1. *Id.* at 31-40.

Also, RX-332 ('878 patent) discloses the preamble and each of the three claim steps of claim 1. *Id.* at 45-50.

Finally, RX-294 (VCEG-N76) discloses the preamble and each of the three claim steps of claim 1. *Id.* at 56-62.

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For every claim element and for each prior art reference, Dr. Drabik distinguished claim 1 solely because the reference supposedly did not disclose processing a 16x16 pixel macroblock. *See* CX-719C (Drabik RWS) at 17, 34, 46, 62-63; Compls. P.II. Br. at 154-56, 158-60, 162-65, 167-69.

Dr. Drabik applied the wrong legal standard and the wrong claim construction. Dr. Drabik testified that he interpreted "macroblock" as a 16x16 pixel region because "each of the four references relied on by Prof. Orchard ... actually define 'macroblock' (as a 16x16 pixel region)." CX-719C (Drabik RWS) at 15-16. But claims are construed based on the patent they appear in, not the prior art alleged to invalidate them. "[A] determination of anticipation, as well as obviousness, involves two steps. First is construing the claim, a question of law for the court, followed by, in the case of anticipation or obviousness, a comparison of the construed claim to the prior art." *Key Pharmaceuticals v. Hercon Laboratories Corp.*, 161 F.3d 709, 714 (Fed. Cir. 1998). One must apply the construction from '596 patent to the prior art, even if the prior art defines terms differently because anticipation "is not an 'ipsissimis verbis' [in the identical words] test." *In re Bond*, 910 F.2d at 832.

The administrative law judge has construed the claim term "macroblock" to mean "a rectangular group of pixels."

Under this claim construction of "macroblock," *i.e.*, "a rectangular group of pixels," Dr. Drabik would have needed to determine whether the macroblocks and field macroblocks identified by Dr. Orchard were "rectangular group[s] of pixels. Motorola does not dispute that they are. At the hearing, Dr. Drabik testified that the regions identified by Dr. Orchard were a rectangular groups of pixels for each prior art reference.

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Drabik Tr. 2358-60 (RX-20); *id.* 2360-62 (RX-18); *id.* 2362-64 (RX-332); *id.* 2366-71 (RX-294).

Accordingly, Microsoft has shown by clear and convincing evidence that RX-18, RX-20, RX-332, and RX-294 anticipate claim 1 of the '596 patent.

Claim 2

Dependent claim 2 recites:

> **The method of claim 1, wherein said frame or field macroblocks can be divided into blocks, and each of said block comprises 16x16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels.**

Microsoft argues that RX-18, RX-332, and RX-294 disclose every limitation of claim 2. Resp. Br. at 192. Microsoft's argument relies on its proposed claim construction being adopted by the administrative law judge. Resp. Br. 192-93.

However, as proposed by Motorola, the disputed claim term "said frame or field macroblocks can be divided into blocks, each of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels" has been construed to mean "the frame macroblocks or field macroblocks can be divided into each of the following block sizes: 16 16, 16 by 8 pixels, 8 by16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels."

Accordingly, Microsoft has not shown by clear and convincing evidence that each of the references RX-18, RX-332, and RX-294, anticipates claim 2 of the '596 patent.

2. Indefiniteness

Claims 1 and 2 are supported by the disclosure of the '596 patent. The written description of the '596 patent adequately describes each of the claimed methods.

One of skill in the art further would recognize that the inventors possessed the idea of "encoding or decoding digital video content, said digital video content comprising a stream of pictures which can each be intra, predicted, or bi–predicted pictures, each of said pictures comprising macroblocks." *See, e.g.*, JX-7 at col. 2, lns. 59-63; col. 4, lns. 60-64. Decoders and the decoding process are referenced throughout '596 patent specification. *See, e.g.*, JX-7 at col. 1, lns. 22-23, 30-39, col. 1, ln. 65 – col. 2, ln. 6; col. 2, lns. 59-67; col. 4, ln. 63 – col. 5, ln. 9; col. 7, lns. 43-52; col. 8, ln. 62 – col. 9, ln. 4; col. 12, ln. 62 – col. 13, ln. 16; col. 14, ln. 44 – col. 16, ln. 7; col. 16, ln. 8 – col. 17, ln. 9; *see also* CX-719C (Drabik RWS) at 67-69.

One of skill in the art also would recognize that the inventors possessed the idea of "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode." As an embodiment of the present invention, the '596 specification discloses AFF coding on a *pair* of macroblocks. FIG. 7 (element 700) of the '596 patent shows a pair of macroblocks that can be used in AFF coding. For AFF coding on macroblock pairs, a frame/field flag is preferably included before each pair of macroblocks to indicate which mode, frame mode or field mode, is used in the coding process. JX-7 at col. 8, ln. 52-col. 9, ln. 4; CX-719C (Drabik RWS) at 70-72.

Finally, one of skill in the art would recognize that the inventors possessed the idea of "encoding or decoding said frame macroblocks or said field macroblocks" according to the '596 patent. As discussed above, the '596 specification describes both

the encoding and decoding processes. In addition, the specification provides detail on the encoding and decoding processes, including detail on temporal and spatial prediction in the context of the '596 patent. *See, e.g.*, JX-7 at col. 9, ln. 44-col. 17, ln. 39; *see also* CX-719C (Drabik RWS) at 72.

Microsoft fails to meet its burden of proving section 112 invalidity. Microsoft argues the patent does not describe "selecting" in connection with decoding. Resp. Br. At 193-94. However, as indicated above, '596 patent describes how the frame/field flag is used in "coding," a term which refers to both encoding and decoding. JX-7 at col. 8, ln. 1 – col. 9, ln. 4; Drabik Tr. 2378-79. As discussed above, Microsoft's argument that the patent does not disclose "decoding" is also without merit.

D. Domestic Industry (Technical Prong)

Motorola's domestic industry products are VIP12XX series of set-top boxes. The VIP12XX series of set-top boxes include the VIP1200, VIP1208, VIP1216, and VIP1225. CX-106C at MOTM_ITC 0020359; CX-706C (Drabik WS) 451-452.

For the reasons set forth below, Motorola has satisfied the technical prong of the domestic industry requirement with respect to the '596 patent.

Claim 1

The preamble of independent method claim 1 recites:

> **A method of encoding or decoding digital video content, said digital video content comprising a stream of pictures which can each be intra, predicted, or bi-predicted pictures, each of said pictures comprising macroblocks, said method comprising the steps of:**

Motorola has satisfied the preamble.

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The claim term "macroblock" has been construed to mean "a rectangular group of pixels."

The preamble recites "encoding or decoding" in the alternative, requiring either encoding *or* decoding. Mitzenmacher Tr. 1589. In compliance with the H.264 Standard, the VIP12XX decodes digital video content comprising a stream of pictures which can be intra, predicted, or bi-predicted pictures, each of said pictures comprising macroblocks. CX-29 at 3, 24; CX-706C (Drabik WS) at 457. Dr. Drabik's observation of the VIP12XX confirmed that the VIP12XX decodes and plays digital video content. CX-706C (Drabik WS) at 457; CX-193.

Microsoft argues that the VIP12XX does not decode "macroblocks" because it [ ] This argument is incorrect for the same reasons discussed above with respect to infringement.

The first step of claim 1 recites:

> **selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode;**

Motorola has satisfied this claim step.

The claim term "selecting to encode or decode a group of neighboring macroblocks in a frame mode or a field mode" has been construed to mean "choosing which mode, frame mode or field mode, to use in encoding or decoding a group of neighboring macroblocks." Further, the undersigned determined that the claim term "group of neighboring macroblocks" need not be construed.

In compliance with the H.264 Standard, when the VIP12XX decodes an H.264 video that is MBAFF-encoded, it selects to decode a group of neighboring macroblocks

in a frame mode or a field mode. CX-29 at 25, 96; CX-706C (Drabik WS) at 458-60; Drabik Tr. 438. Dr. Drabik's observation of the VIP12XX confirmed that the VIP12XX selects to decode a group of neighboring macroblocks in a frame mode or field mode. CX-706C (Drabik WS) at 459; CX-193.

The manual for the SMP8634 chip used in the VIP12XX set-top box confirms that the chip selects to decode a group of neighboring macroblocks in a frame mode or a field mode. Specifically, [

]

CX-214C at SIGMA_0000575.

Microsoft argues that (1) a pair of macroblocks is not a "group of macroblocks;" (2) the claimed "selecting" is done only in an encoder because a decoder just follows instructions from the encoder; and (3) luma and chroma components are not "pixels." These claim construction arguments are not correct for the reasons described above with respect to infringement.

The second step of claim 1 recites:

> **arranging said group of neighboring macroblocks for processing into frame macroblocks or field macroblocks according to the selected one of said frame mode or said field mode; and**

Motorola has satisfied this claim step.

The undersigned determined that the claim term "group of neighboring macroblocks" need not be construed.

In compliance with the H.264 Standard, the VIP12XX arranges macroblock pairs for processing into frame macroblocks or field macroblocks according to the selected one

of said frame mode or said field mode as part of the picture construction process. CX-29 at 191-192; CX-706C (Drabik WS) at 460-62. Dr. Drabik's observation of the VIP12XX confirmed that the VIP12XX arranges said group of neighboring macroblocks for processing into frame macroblocks according to the selected one of said frame mode or said field mode. CX-706C (Drabik WS) at 461; CX-193.

The SMP8634 manual confirms that the SMP8634 meets this limitation. For example, the manual indicates that, [

] CX-214C at SIGMA_0000627 [

]

Microsoft argues that there is no "arranging" of a group of neighboring macroblocks in the VIP12XX for the same reasons it argued with respect to the Xbox. This claim construction argument is again incorrect for the same reasons as discussed above with respect to infringement. Specifically with respect to the VIP12XX, Microsoft argues that the field macroblocks are not arranged into frame macroblocks because they are merely [ ]. This is a distinction without a difference. When a field macroblock is [ ], it becomes a frame macroblock.

The third step of claim 1 recites:

> **encoding or decoding said frame macroblocks or said field macroblocks, wherein, the step of arranging said group of neighboring macroblocks**

> **for processing into frame macroblocks or field macroblocks includes the step of:**
>
> > **in frame mode, jointly processing two fields in said group of neighboring macroblocks, said group of neighboring macroblocks being divided into frame macroblocks, and each of said frame macroblocks including both top and bottom field pixels;**
> >
> > **in said field mode, separately processing two fields of said group of neighboring macroblocks, said group of neighboring macroblocks being split into field macroblocks, and each of said field macroblocks including either top or bottom field pixels, and wherein said frame macroblocks and said field macroblocks are the same size.**

Motorola has satisfied this claim step.

"encoding or decoding"

In compliance with the H.264 Standard, the VIP12XX decodes the frame or field macroblocks. CX-29 at 109; CX-706C (Drabik WS) at 462-63. Dr. Drabik's observation of the VIP12XX confirmed that the VIP12XX decodes frame macroblocks and field macroblocks. CX-706C (Drabik WS) at 463; CX-193.

The SMP8634 manual confirms that the SMP8634 used in the VIP12XX set-top box decodes said frame or field macroblocks. The manual indicates that the SMP8634 performs motion compensation on frame or field macroblocks. CX-214C at SIGMA_0000584-0000585.

"in frame mode, jointly processing"

The claim term "jointly processing two fields in said group of neighboring macroblocks" has been construed to mean "for each macroblock within the group of neighboring macroblocks, processing samples from the two fields of a coded frame."

In compliance with the H.264 Standard, in frame mode, the VIP12XX jointly processes two fields in the group of neighboring macroblocks. CX-706C (Drabik WS) at 463-68. During the H.264 decoding process, each macroblock of a frame macroblock pair has samples from two fields and those samples are processed together. CX-29 at 8. During processing, the frame macroblock pair is in the state of being divided into frame macroblocks. *Id.* Each frame macroblock includes both top and bottom field pixels. *Id.* The top macroblock is decoded first, followed by the bottom macroblock.

The SMP8634 manual confirms that the VIP12XX jointly processes both fields in the group of neighboring macroblocks when performing prediction of a macroblock in intra 16 16 mode. In the VIP12XX, this happens in the [ ]. CX-214C at SIGMA_0000580. [ ] is used when the [ ] is equal to zero, indicating that the macroblocks are in a frame macroblock pair. *Id.*

"in said field mode, separately processing"

The claim term "separately processing two fields of said group of neighboring macroblocks" has been construed to mean "for each macroblock within the group of neighboring macroblocks, processing samples from a single field."

In compliance with the H.264 Standard, in field mode, the VIP12XX separately processes each field in the group of neighboring macroblocks when performing prediction of a macroblock in intra 16 16 mode. CX -706C (Drabik WS) at 465-66. During the H.264 decoding process, each macroblock of a field macroblock pair has samples from only a single field and those samples are processed separately. CX-29 at 8. During processing, the field macroblock pair is in the state of being split into field

macroblocks. *Id.* Each of the field macroblocks includes either top or bottom field pixels. *Id.* The top macroblock is decoded first, followed by the bottom macroblock.

The SMP8634 manual confirms that the chip separately processes two fields in said group of neighboring macroblocks. In the VIP12XX, this happens in the [ ] module. CX-214C at SIGMA_0000580. [ ] is used when the [ ] is equal to one, indicating that the macroblocks are in a field macroblock pair. *Id.*

Dr. Drabik's operation of the VIP12XX confirmed that the VIP12XX performs the jointly and separately processing of claim 1. CX-706C (Drabik WS) at 464, 466; CX-193.

Microsoft's arguments that there is no "jointly processing" or "separately processing" in the VIP12XX are not correct for the reasons discussed above with respect to infringement.

Finally, the VIP12XX operates such that the frame macroblocks and the field macroblocks are the same size. CX-706C (Drabik WS) at 467.

<u>Claim 2</u>

Dependent claim 2 recites:

> **The method of claim 1, wherein said frame or field macroblocks can be divided into blocks, and each of said block comprises 16x16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels.**

Motorola has satisfied this method claim.

The claim term "said frame or field macroblocks can be divided into blocks, each of said block comprises 16 16, 16 by 8 pixels, 8 by 16 pixels, 8 by 8 pixels, 8 by 4

pixels, 4 by 8 pixels, or 4 by 4 pixels" has been construed to mean "the frame macroblocks or field macroblocks can be divided into each of the following block sizes: 16 16, 16 by 8 pixels, 8 by16 pixels, 8 by 8 pixels, 8 by 4 pixels, 4 by 8 pixels, or 4 by 4 pixels."

In compliance with the H.264 Standard, the VIP12XX must be able to decode macroblocks that have been partitioned into each of the seven block sizes. CX-29 at 26, 105-07; CX-706C (Drabik WS) at 468-69. The SMP8634 manual confirms that the chip operates on each of the seven block sizes. The [ ] identify a [ ] and a [ ] that identify how the macroblock is partitioned. CX-214C at SIGMA_0000578.

VIII. U.S. Patent No. 5,357,571

U.S. Patent No. 5,357,571 ("the '571 patent") is titled, "Method for Point-to-Point Communications within Secure Communication Systems." JX-3 ('571 patent). The '571 patent issued on October 18, 1994, and the named inventor is Dean E. Banwart. *Id.* The '571 patent "relates generally to communication systems and, in particular, to a method for providing point-to-point communications within secure communication systems." *Id.* at col. 1, lns. 7-10 (Field of the Invention).

Motorola asserts independent method claim 12 and dependent claim 13. The asserted claims read as follows:

> **12.** In a secure communication system that includes a plurality of communication units, wherein each communication unit of the plurality of communication units stores a limited set of encryption key variables, a method for a communication unit of the plurality of communication units to receive a point-to-point communication within the

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> secure communication system, the method comprises the steps of:
>
> > a) receiving, by the communication unit, identity of an encryption key variable and information pertaining to a predetermined function, wherein the identity of the encryption key variable and information pertaining to the predetermined function have been transmitted by a transmitting communication unit;
> >
> > b) generating, by the communication unit, a private call key variable based on the encryption key variable and the information pertaining to the predetermined function; and
> >
> > c) utilizing the private call key variable to privately communicate with the transmitting communication unit.
>
> **13**. In the method of claim **12**, step (b) further comprises generating the, private call key variable by modifying the encryption key variable based on information pertaining to the predetermined function, wherein the information pertaining to the predetermined function includes, at least in part, a unique identification code of the communication unit, a unique identification code of the transmitting communication unit, or a combination of the unique identification code of the communication unit and the unique identification code of the transmitting communication unit.

JX-3 at col. 9, lns. 28-58.

A. Claim Construction[72]

1. "communication unit" (claims 12 and 13)

[72] A person of ordinary skill in the art in the July/August 1993 timeframe was typically a person having at least a bachelor's degree in electrical or computer engineering or equivalent and at least three years of experience working in data communications. This would include working in the field of network communications, including cryptographic protection of data within a communication system, and including the hardware and/or software necessary to implement the cryptographic protection of the data. Common systems in this field included cellular systems, paging systems, telephone systems, and wired or wireless data networking systems. CX-708C (Acampora WS) at 15-16.

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Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"communication unit" (claims 12 and 13)	*No construction necessary.* *If construed:* a unit that communicates	a mobile transmitter and receiver used by an operator to communicate with another operator

The claim term "communication unit" appears in the preamble, and each of the three steps of independent claim 12, and in dependent claim 13. JX-3.[73]

Motorola construes the term to mean "a unit that communicates." Compls. Br. at 164. Microsoft construes the term to mean "a mobile transmitter and receiver used by an operator to communicate with another operator." Resp. Br. at 40.

As proposed by Motorola, the claim term "communication unit" is construed to mean "a unit that communicates."

The plain language of the claim dictates that any unit that communicates is a "communication unit."

"Communication systems are known to comprise mobile transmitters and receivers, such as in-car mobile or hand-held portable radios, hereafter referred to as communication units, as well as fixed transmitters and fixed receivers, such as base stations or controllers (fixed end)." JX-3 ('571 patent) at col. 1, lns. 13-18. This passage provides examples of communication units and is not a limitation. The use in that passage of the open-ended term "comprise" makes clear that these are examples and that additional, unrecited communication units beyond those expressly listed are envisioned by the patent. *See, e.g.*, *Mars Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1376 (Fed. Cir. 2004).

[73] The claim term also appears in non-asserted claims. JX-3.

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Furthermore, the specification explicitly discloses an example of communication units that may be "fixed dispatch type equipment." JX-3 at col. 3, lns. 18-24.[74] As Mr. Banwart, the inventor, explained, the actual "ASTRO" communication units that the patent refers to (JX-3 at col. 3, lns. 21-23) included units that were not mobile. Banwart Tr. 726-27, 731; *see also* Acampora Tr. 925–27 ("[A]mong the communication units could be remote units that are used for remote monitoring purposes.... And such a unit would not necessarily be mobile. In fact it wouldn't be. It would be fixed."); Geier Tr. 1239-1240 (discussing fixed units). Thus, a communication unit may be fixed, mobile, or portable, without limitation. Under Microsoft's construction, in the preferred embodiment of a police communication system disclosed in the '571 patent, there could be no fixed communication units at police stations. Only the policemen outside the station could communicate with each other. That makes no sense.

Accordingly, there is no basis to require the communication units to be "mobile," as Microsoft proposes.

As to whether the communication units must be used by a user, Figure 1 specifically shows two communication units: (1) 102, which has the capability to receive input from a user, and (2) 103, which does ***not*** have that capability. CX-708C (Acampora WS) at 53. The specification states, "It is understood that <u>either or both</u> of the communication units (102-103) could include an input/output device." JX-3 at col. 2, ln. 67 (emphasis added). Thus, an operator is not required. Banwart Tr. 706, 726 ("[T]he

[74] There is a typographical error in the passage at column 3, line 20, of the '571 patent, in which a comma is missing between "a radio mounted in a vehicle" and "fixed dispatch type equipment." The comma is present in the as-filed application. JX-4 at MOTM_ITC 0000149.

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unit could be free-standing without human users with it."), 727 (examples of unmanned devices), 731; Geier Tr. 1240–41. Moreover, although claims 1, 6, 9 and 15 specifically require that there be an "operator" of a communication unit, asserted claim 12 does not. The basic rule of "claim differentiation" dictates that Microsoft's construction is wrong. *Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971-72 (Fed. Cir. 1999).

Accordingly, there is no basis to require the communication units to be "used by an operator to communicate with another operator," as Microsoft proposes.

2. "encryption key variable" (claims 12 and 13)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"encryption key variable" (claims 12 and 13)	*No construction necessary.* *If construed:* a stored value used to generate a private call key variable	information used by an encryption algorithm to uniquely encrypt data and by a decryption algorithm to decrypt the data

The claim term "encryption key variable" appears in the preamble, and steps a) and b) of independent claim 12, and in dependent claim 13. JX-3[75]

Motorola construes the term to mean "a stored value used to generate a private call key variable." Compls. Br. at 166. Microsoft construes the term to mean "information used by an encryption algorithm to uniquely encrypt data and by a decryption algorithm to decrypt the data." Resp. Br. at 46.

The claim term "encryption key variable" is construed to mean "a dynamic parameter used to reduce unauthorized eavesdropping of transmitted communication in a communication system."

[75] The claim term also appears in non-asserted claims 1, 2, 3, 6, 7, 9, 10, 11, 15, 16, and 17. JX-3.

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As indicated above, the claim term "encryption key variable" appears in the preamble, and the first and the second steps of independent method claim 12, and in dependent claim 13, as well as non-asserted claims 1, 2, 3, 6, 7, 9, 10, 11, 15, 16, and 17. JX-3.

Describing prior art in the background of the invention, the '571 patent discloses:

> Communication systems are known to comprise mobile transmitters and receivers, such as in-car mobile or hand-held portable radios, hereafter referred to as communication units, as well as fixed transmitters and fixed receivers, such as base stations or controllers (fixed end). A typical message within such a communication system may begin with a mobile unit converting an audio signal into a digital data stream suitable for transmission over an RF (radio frequency) channel to either another communication unit or the fixed end. Such systems are often used by public safety institutions, such as local or federal law enforcement agencies. The existence of commercially available radio frequency scanners makes it possible for unauthorized parties to monitor the information transmitted within such a communication system. To reduce unauthorized eavesdropping, communication systems encrypt communications such that, without knowledge of the encryption method and a decryptor, the communications are unintelligible.
>
> * * *
>
> As is known, digital encryption methods use a reversible algorithm to introduce randomness into a digital data stream. An algorithm that randomizes digital data is called an encryptor; that which reconstructs the original data from the randomized data, a decryptor. An encryptor/decryptor algorithm typically utilizes dynamic parameters, often referred to as keys or key variables, to uniquely specify the nature of the randomness introduced to the digital data stream. Thus, only encryptors and decryptors utilizing an identical algorithm and key are capable of reproducing intelligible messages. An example of an encryptor/decryptor algorithm is the Data Encryption

> Standard (DES). Typically, each communication unit within a secure communication system Can [sic] store anywhere from one to twenty keys for use in encrypted communications. A communication unit's capacity for key storage is typically limited by the cost of the storage devices and protection technology required to safely maintain a set of keys.

JX-3 at col. 1, lns. 13-50 (emphases added).

Thus, the '571 patent specification explains that "communication systems encrypt communications" in order to "reduce unauthorized eavesdropping." The specification also explains that "[a]n encryptor/decryptor algorithm typically utilizes dynamic parameters, often referred to as keys or key variables." Further, the specification also discloses prior art Data Encryption Standard (DES) as an example of an encryptor/decryptor algorithm. Therefore, a person of ordinary skill would understand the claim term "encryption key variable" to mean some type of a dynamic parameter that is used to reduce unauthorized eavesdropping of communication that is transmitted in a communication system.

Microsoft argues that "[t]he specification repeatedly notes that the defining feature of an encryption key variable is that it can be used by an encryption algorithm to encrypt/decrypt data, consistent with Microsoft's construction." Resp. Br. at 46. Microsoft contends that "an encryption key variable is one that is provided to the encryptor/decryptor for use in encrypting/decrypting data, whether directly or after modification, depending on whether the encryption key variable is used for group-wide or point-to-point communications." *Id.* at 47 citing JX-3 at col. 3, lns. 43-53, and col. 4, lns. 1-6.

Indeed, the specification portions cited by Microsoft appear to support

Microsoft's proposed claim construction. However, as discussed below, they do not.

Describing the present invention in FIG. 1, the '571 patent discloses:

> When directed to establish an encrypted communication session, such as an encrypted group-wide call, the microprocessor (106, 109) retrieves an encryption key variable from memory storage (107, 110). This information is used in conjunction with the encryptor/decryptor device to encrypt/decrypt information normally transmitted to/from other communication units. In order for all communication units involved in the group-wide call to reproduce intelligible information, they must each be utilizing the identical encryption key variable. Conversely, if an operator of a communication unit washed [sic] to engage in a point-to-point communication, they Would [sic] require the exclusive use of an encryption key variable for the duration of the communication, thereby preventing other communication units from legitimately using that key.

JX-3 at col. 3, lns. 43-58 (emphases added). Here, the '571 patent explains that when making a group-wide call, the encryption key variable is retrieved from memory and is then used in conjunction with prior art encryptor/decryptor to encrypt/decrypt the information.

Describing a logic diagram of the present invention shown in FIG. 2, the '571 patent discloses:

> To ensure the security of the point-to-point communication, the first communication unit determines a private call key variable (201). To this end, a predetermined function is used to modify an encryption key such that the resultant private all [sic] key variable is unique and reproducible. As a first example of the predetermined function, the operator of the first communication unit is prompted for a unique user code in addition to the unique identification code of the destination communication unit(s). The unique user Code [sic] is used to modify an encryption key variable via a known process, discussed below, to create the private call key variable such that the private call key variable is equal

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> in length and validity as the encryption key variable.

JX-3 at col. 4, lns. 1-14 (emphases added). Thus, the '571 patent specification explains that in a *point-to-point communication*, an encryption key variable is modified by using a predetermined function to generate a private call key variable.

Indeed, describing the present invention generally, the '571 patent discloses:

> Generally, the present invention provides a method for secure point-to-point communications within a secure communications system. This is accomplished by allowing a plurality of communication units within the system to generate unique encryption key variables from a limited set of encryption key variables stored in each communication unit. For example, an Operator of a first communication unit selects at least one destination communication unit for a point-to-point communication. A private call key variable is generated by the first communication unit by modifying an encryption key variable of the limited set of encryption key variables based on a predetermined function. An identity of the encryption key variable and information pertaining to the predetermined function used to generate the private call key are transmitted by the first communication unit to the destination communication unit, which in turn generates the private call key variable based on the identity of the encryption key variable and information pertaining to the predetermined function. At this point, the first communication unit and the destination communication unit(s) are free to engage in a secure point-to-point communication without other communication units in the secure system being able to eavesdrop or without having to add a large number of encryption keys to the secure system.

JX-3 at col. 2, lns. 26-51 (emphases added).

Therefore, as noted above, in the prior art, an encryption key variable was used in such algorithms as "DES" (Data Encryption Standard). For the present invention, however, an encryption key variable is used in an encryption algorithm that uses a predetermined function to generate a private call key variable, and then uses the private

call key variable for the remaining steps.

Most importantly, in all of the claims (asserted and non-asserted) that contain an "encryption key variable" limitation (claims 1, 2, 3, 6, 7, 9, 10, 11, 12, 13, 15, 16, and 17), the "encryption key variable" is used in some way to generate a "private call key variable" in a "point-to-point communication."

Contrary to the claimed invention, Microsoft is attempting to inject into its claim construction the requirement that all encryption key variables be capable of use in prior art encryption algorithms. Microsoft relies on the preferred embodiment in which the encryption key variable could be used in the encryption algorithm of the invention to generate a private call key variable, and also be used in a prior art encryption algorithm. Microsoft then uses its claim construction to impose a claim requirement that a system be able to use the prior art approach. This is improper.

Motorola, in support of its proposed claim construction ("a stored value used to generate a private call key variable"), argues that the claim term "encryption key variable" refers to the stored keys used to generate the private call key variables, and that it is the private call key variables, not the encryption key variables, that encrypt/decrypt data under the terminology of the claims. Compls. Br. at 166.

Motorola's argument is rejected. Motorola's proposed construction erroneously seeks to import other claim limitations into this term and thereby renders those limitations redundant. First, Motorola's construction requires that an encryption key variable be "stored," which would render the phrase "stores a limited set of encryption key variables" in the preamble of the asserted independent claims redundant. The second component of Motorola's proposed construction, "used to generate a private call key

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variable," would render the phrase "generating ... a private call key variable based on the encryption key variable" in step (b) of asserted claim 12 redundant.

Accordingly, the claim term "encryption key variable" is construed to mean "a dynamic parameter used to reduce unauthorized eavesdropping of transmitted communication in a communication system."

3. "point-to-point communication" (claim 12)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"point-to-point communication" (claim 12)	*No construction necessary.* *If construed:* communication between two or more communication units	a communication initiated by an operator of a "communication unit" in which the operator identifies the destination operator's "communication unit."

The claim term "point-to-point communication" appears in the preamble of independent claim 12. JX-3.[76]

Motorola construes the term to mean "communication between two or more communication units." Compls. Br. at 167. Microsoft construes the term to mean "a communication initiated by an operator of a 'communication unit' in which the operator identifies the destination operator's 'communication unit'." Resp. Br. at 57.

The claim term "point-to-point communication" is construed to mean "secure communication between two or more communication units."

The '571 patent teaches that a "point-to-point communication" is one that is secure. *See* JX-3 at col. 6, lns. 51-65 ("The present invention provides method for point-to-point communications (secured private calls) within secure communications

[76] The claim term also appears in non-asserted claims. JX-3.

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systems.").

As argued by Motorola, support for including "two ***or more*** communication units" within the ambit of this claim term is found, for example, in the Abstract, which states: "A first communications unit receives a request from an operator for a point-to-point communication identifying at least one destination communication unit." JX-3 at col. 2, lns. 31-35, 45-47, CX-708C (Acampora WS) at 49.

Microsoft does not dispute this, but instead attempts to impose a requirement that an operator (by which Microsoft presumably means a human operator) be involved at both ends of the communication. As discussed above with respect to the construction of "communication unit," there is no basis for imposing such a requirement. Point-to-point communications where one or both communication units operate autonomously are well within the ambit of the claimed '571 invention. Banwart Tr. 726-27; JX-3 at col. 2, ln. 67 – col. 3, ln.1, FIG. 1.

Accordingly, the claim term "point-to-point communication" is construed to mean "secure communication between two or more communication units."

4. "identity of an encryption key variable" (claim 12)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"identity of an encryption key variable" (claim 12)	an identity separate and independent of the unique identification code of the communication unit	a unique identifier of the encryption key variable, including the key itself

The claim term "identity of an encryption key variable" appears in step a) of independent claim 12. JX-3.

Motorola construes the term to mean "an identity separate and independent of the

unique identification code of the communication unit." Compls. Br. at 167. Microsoft construes the term to mean "a unique identifier of the encryption key variable, including the key itself." Resp. Br. at 50.

The claim term "identity of an encryption key variable" is construed to mean "an identifier that is capable of uniquely identifying which encryption key variable of the limited set is being used."

First, the plain language of the disputed claim term shows that the term should mean an identifier that is capable of uniquely identifying a particular encryption key variable. Consistent with the plain language, the '571 patent specification discloses that "[t]he identification of the encryption key variable is typically an index number or label <u>capable of uniquely identifying which key of the limited set is being used</u>." JX-3 at col. 5, lns. 13-16 (emphasis added); RRX-23C (Geier RWS) at 28-29.

Microsoft's proposed construction, in which the encryption key variable itself can serve as the "identity of an encryption key variable," is rejected. CX-708C (Acampora WS) at 51. As noted above, the identity of the encryption key variable is used to identify "which key of the limited set is being used." By "limited set," the specification is referring to the claimed limited set of stored encryption key variables. By the very words of the claims, the encryption key variable must be stored in a communication unit before the communication unit can receive the identity of that encryption key variable. Geier Tr. 1247-48.

Motorola's proposed requirement that the identity of the encryption key variable be "separate and independent" of the identification code of the communication unit lacks support. The specification does not prohibit a relationship between the identity of the

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encryption key variable and the identity of the communication unit. RRX-23C (Geier RWS) at 27-28.

5. "private call key variable" (claims 12 and 13)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"private call key variable" (claims 12 and 13)	a session key used throughout a communication session without the necessity to re-generate the key after each packet or message is transmitted	information used by an encryption algorithm to uniquely encrypt data and by a decryption algorithm to decrypt the data when the "communication unit" is engaged in "point-to-point communication"

The claim term "private call key variable" appears in steps b) and c) of independent claim 12, and in dependent claim 13. JX-3.[77]

Motorola construes the term to mean "a session key used throughout a communication session without the necessity to re-generate the key after each packet or message is transmitted." Compls. Br. at 169. Microsoft construes the term to mean "information used by an encryption algorithm to uniquely encrypt data and by a decryption algorithm to decrypt the data when the "communication unit" is engaged in "point-to-point communication"." Resp. Br. at 54.

The claim term "private call key variable" is construed to mean "a dynamic parameter used in a point-to-point communication in a communication system."

In connection with the claim term "encryption key variable," the undersigned has construed the term "key variable" to mean "a dynamic parameter," *supra*; *see* JX-3 at col. 1, lns. 13-50.

[77] The claim term also appears in non-asserted claims. JX-3.

Additionally, the term "private call" in "private call key variable" is synonymous with a secure communication, *i.e.*, a point-to-point communication. *See* JX-3 at col. 6, lns. 51-65 ("The present invention provides method for point-to-point communications (secured private calls) within secure communications systems"). As the '571 patent specification explains, "[a] private call key variable is generated . . . by modifying an encryption key variable of the limited set of encryption key variables based on a predetermined function." JX-3 at col. 2, lns. 35-38. By creating this private call key variable, communication units "are free to engage in a secure point-to-point communication without other communication units in the secure system being able to eavesdrop . . . ." *Id.* at col. 2, lns. 45-49 (emphasis added).

B. Infringement Analysis of the '571 Patent

Microsoft argues that Motorola has failed to show that anyone has ever performed the method steps of all asserted claims of the '571 patent. Resp. Br. at 10. According to Microsoft, it is not enough to show that a particular article is capable of performing the claimed steps; instead, the patentee must show that each step is actually performed in the United States. *Id.* (citing *Joy Techs., Inc. v. Flakt, Inc.*, 6 F.3d 770, 775 (Fed. Cir. 1993)). Microsoft's argument is rejected.

Motorola's infringement claims are based, in part, on the Xbox's implementation of the IEEE's 802.11 standard, colloquially known as Wi-Fi, and the normal use of the Xbox with Wi-Fi in a home environment. As confirmed by Microsoft's own admissions, the Xbox products are compliant with the IEEE 802.11 standard. *See, e.g.*, CX-708C (Acampora WS) at 87-95; CX-22; CX-23; CX-378C; CX-379C; CX-643C (Casebolt Tr. 38-39, 57, 79, 81, 88, 96-98); CX-648C (McClive Tr. 95-96, 132); CX-653C (Steiner Tr.

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12, 35-41, 54, 97-100); CX-654C (Caruana Dep. Tr.) at 9-21, 30, 36-37, 116-117, 154. For all purposes pertinent to this investigation, the IEEE 802.11 standard is fully and completely described in a standards document referred to as "802.11-2007." CX-708C (Acampora WS) at 86-87; CX-383. The 802.11-2007 document therefore also describes a product that complies with the standard, including the Xbox. CX-708C (Acampora WS) at 86-87.

1. Accused Products

Motorola argues that the accused products are Microsoft's Xbox 360 console, including the Xbox 360 S 4 GB and 250 GB consoles, as well as the Xbox 360 Wireless N Adapter (collectively, "the Xbox"), imported into the United States, and/or sold after importation. Compls. Br. at 169-70 (citing CX-708C (Acampora WS) at 86 and Tab D).

Microsoft argues that Motorola failed to provide any evidence that the accused products that contain [ ] infringe the '571 patent. Resp. Br. at 8-10. Microsoft asserts that "[a]ll Wireless N Adapter products currently being sold use the [ ] and certain Xbox consoles contain a [ ] that uses the [ ]" *Id.* at 8 (citing RX-317C (Caruana WS) at Q29). Microsoft explains that "Motorola was aware of these [ ] and took discovery on these devices." *Id.* (citing CX-654C (Caruana Dep. Tr.) at 33-36). It is argued that "Motorola nevertheless chose not to perform an infringement analysis on any of these Atheros-based devices." *Id.* (citing CX-708C (Acampora WS) at Tab E, p. 2 ("Other Xbox products use, or are planned to use, WiFi chips from [ ]. This analysis focuses on the [ ] WiFi chip").

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Motorola argues that "Microsoft apparently seeks to exploit discovery misconduct and to end-run the Commission's enforcement remedies." Compls. Reply Br. at 51. Motorola contends that "there is no basis for entering specific findings with respect to [ ] Xbox products." *Id.* at 52. Motorola asserts that "[t]o date, no Xbox product with an [ ] has been imported," and that "Microsoft has not contended otherwise." *Id.*

Motorola explains:

> Early in this Investigation, Motorola interrogatories required Microsoft to identify all Xbox products that were "currently being, ***or in the next twelve (12) months will be*** ... imported." CX-629C at 9. Those interrogatories further requested identification of the chip contained in such product. *Id.* at 9-10. In response, Microsoft identified only the Xbox product code-named [ ] Microsoft's name for Xbox products using [ ] chips. CX-630C at 17. And Microsoft only identified [ ] chips. CX-630C at 18 ("The Xbox 360 S 250 GB and Xbox 360 S 4 GB Consoles use the [ ] Wi-Fi chip."), 22 ("The Xbox 360 S 250 GB and Xbox 360 S 4GB consoles use a wireless module assembly provided by [ ]"). Microsoft supplemented its response on April 22, 2011, but did not identify [ ] or any other chip manufacturer. CX-631C at 4-5. Microsoft did not further supplement.
>
> In addition, two Microsoft corporate deposition witnesses confirmed (as late as June 24, 2011, three weeks before the close of fact discovery) that imported Xboxes did not contain [ ] chips, and that Xboxes with [ ] chips had not yet even left the factory. CX-643 (Casebolt) at 125, 127-28; CX-654C (Caruana [Dep. Tr.]) at 34-35. Long after discovery closed, Microsoft employee Casebolt testified in his September 9, 2011 direct written testimony that the Xbox with [ ] was still not being shipped. RX-314C at 8.

Id. at 52-53.

First, RX-317C (Caruana WS) does not support Microsoft's assertion that "[a]ll Wireless N Adapter products currently being sold use the [ ] and certain Xbox consoles contain a [ ] that uses the [ ]." Q29 states:

"Which wireless networking products use Atheros chipsets?" Mr. Caruana's answer is: [ ] RX-317C (Caruana WS) at Q29 (emphasis in original). In reality, the question and answer is silent about whether these [ ] products are "currently being sold."

If in fact Microsoft has imported Xbox products containing [ ] Microsoft has violated its discovery obligations under 19 C.F.R. 210.27(c) by failing to satisfy its "duty seasonably to amend a prior response to an interrogatory … or request for admission." Moreover, the parties have not presented evidence and arguments specifically addressing new products containing [ ].

Accordingly, the administrative law judge is not making any factual findings on whether Xbox products containing [ ] are non-infringing.

2. Direct Infringement

For the reasons set forth below, Motorola has shown that Microsoft's accused products directly infringe all asserted claims of the '571 patent.

Claim 12

The preamble of independent method claim 12 recites:

> **In a secure communication system that includes a plurality of communication units, wherein each communication unit of the plurality of communication units stores a limited set of encryption key variables, a method for a communication unit of the plurality of communication units to receive a point-to-point communication within the secure communication system, the method comprises the steps of:**

Motorola has satisfied the preamble.

The claim term "communication unit" has been construed to mean "a unit that

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communicates." The claim term "encryption key variable" has been construed to mean "a dynamic parameter used to reduce unauthorized eavesdropping of transmitted communication in a communication system." The claim term "point-to-point communication" has been construed to mean "secure communication between two or more communication units."

When the Xbox is used with a Wi-Fi router, with both set for WPA or WPA2 security, the Xbox and the router are communication units in a secure communication system, with point-to-point communication between the router and the Xbox. CX-708C (Acampora WS) at 123. The infringing use consists of Wi-Fi communication between the Xbox and the Wi-Fi router. That a router can be a communication unit is confirmed by the fact that the ASTRO system, cited in the '571 specification as an exemplary communication unit, included router units that could encode/decode a wireless communication to allow wireless users to connect to a wired phone network, just as a Wi-Fi router allows a wireless user to connect to the wired Internet. Banwart Tr. 727-728, 731.

The claim term "encryption key variable" has been construed to mean "a dynamic parameter used to reduce unauthorized eavesdropping of transmitted communication in a communication system."

When set for WPA or WPA2 security, the Xbox and the router store a limited number of encryption key variables. In particular, [

] CX-708C (Acampora WS) at 124; Acampora Tr. 932; Caruana Tr. 1157; Geier Tr. 1216. [

] CX-386. [

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] Geier Tr. 1216. After that initial login, [ ]. Geier Tr. 1216; CDX-14 and CDX-15 (demonstrating login and reconnection process). Also, as required by the parties' agreed-upon construction of the preamble, [ ] CX-708C (Acampora WS) at 125-135, 153-156; CDX-17; Geier Tr. 1216; CX-654C (Caruana Dep. Tr.) at 75, 161-63; CX-387C. The passphrase of the router is an encryption key variable, a dynamic parameter used to reduce unauthorized eavesdropping of transmitted communication in a communication system. CX-708C (Acampora WS) at 124-129.

Microsoft argues that the stored passphrase is not an encryption key variable. Microsoft argues that under its claim construction, the encryption key variable must be used by an encryption/decryption algorithm to uniquely encrypt/decrypt data. RRX-23C (Geier RWS) at 34-40. Microsoft's proposed claim construction was rejected, *supra*.

Step a) of claim 12 recites:

> **a) receiving, by the communication unit, identity of an encryption key variable and information pertaining to a predetermined function, wherein the identity of the encryption key variable and information pertaining to the predetermined function have been transmitted by a transmitting communication unit;**

Motorola has satisfied this claim step.

The claim term "identity of an encryption key variable" has been construed to mean "an identifier that is capable of uniquely identifying which encryption key variable of the limited set is being used."

Xbox consoles when used with an 802.11-compliant router, with both set for

WPA or WPA2 security, infringe this step. The Xbox is the receiving communication unit, and the router is the transmitting communication unit. When the Xbox is turned on after having been previously connected (discussed above), it issues a "Probe Request," to which the router responds with a "Probe Response." CX-708C (Acampora WS) at 145-46. The Probe Response includes a value called the "Service Set Identifier" (SSID), which is the name of the network that the router is connected to. *Id.* at 146; CX-383 at Section 7.2.3.9. The SSID identifies the previously stored passphrase (*i.e.*, the encryption key variable). CX-708C (Acampora WS) at 153-156; CX-387C. Thus, the SSID is the "identity of an encryption key variable." CX-708C (Acampora WS) at 146-147.

The Probe Response also includes a value called the "Basic Service Set Identification" (BSSID). *Id.* at 147-149, 152-153, 157. The BSSID is the network address of the router, which uniquely identifies the router. *Id.* at 147. After the Xbox has received the probe response from the router, the router and the Xbox exchange a series of messages called the "4-Way Handshake." CX-708C (Acampora WS) at 106-108, 147. During this process, a value called the "ANonce" is sent from the router to the Xbox.[78] *Id.* at 147, 151-153, 158; CDX-13; CX-365C; Geier Tr. 1198-99. The ANonce is a unique random number generated by the router during the 4-Way Handshake. CX-708C (Acampora WS) at 150-51. The BSSID and ANonce values are the "information pertaining to the predetermined function" because, as discussed below in connection with step b), they are used in a predetermined function to generate the private call key variable (see below). CX-708C (Acampora WS) at 148.

[78] "Nonce" stands for "number used once," and the "A" indicates that it is generated by the "Authenticator," which in this instance is the router. *See* CX-383 at 11, 17.

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Microsoft is incorrect when it argues that the "identity" of the encryption key variable must be unique to the entire universe of communication systems practicing the patented invention. Basically, Microsoft is arguing that if the invention is implemented in one system (*e.g.*, Washington) by using the numbers 1, 2, 3, etc., to identify the stored encryption keys, there could only be one such system in the world, because the moment a second system is created elsewhere (*e.g.*, Baltimore) that also uses 1, 2, 3, etc., the identifiers are no longer unique, even though they are unique within each system. Such a construction excludes the preferred embodiment (police systems in multiple municipalities) from coverage — an unsound approach. The SSID is undeniably an identifier that is capable of uniquely identifying which encryption key variable of the limited set is being used.

Step b) of claim 12 recites:

> **b) generating, by the communication unit, a private call key variable based on the encryption key variable and the information pertaining to the predetermined function; and**

Motorola has satisfied this claim step.

The claim term "private call key variable" has been construed to mean "a dynamic parameter used in a point-to-point communication in a communication system."

The Xbox operating in conjunction with an 802.11-compliant router, with both set for WPA or WPA2 security, infringes this claim step. During the 4-Way Handshake, described above, the Xbox generates an encryption key called the "Pairwise Transient Key" (PTK), which is the private call key variable of the claim. CX-708C (Acampora WS) at 158; Geier Tr. 1196, 1204-1205. The passphrase, which is the encryption key

variable, and the BSSID and the ANonce, which make up the information pertaining to the predetermined function, are used to generate the PTK.

In particular, the passphrase is used in a "hash function" to generate the PSK. CX-708C (Acampora WS) at 136, 159. Caruana Tr. 1158; Geier Tr. 1216 (the PSK is generated from the passphrase each time the Xbox is turned on). For home wireless networks, including those used with the Xbox, the PSK is used as the "Pairwise Master Key" (PMK), which is another encryption key used in the 802.11 standard. CX-708C (Acampora WS) at 159; Acampora Tr. 933-934; Geier Tr. 1196. The PMK in turn is used with other values to generate the PTK. Thus, the PTK is generated based on the passphrase, *i.e.*, the "encryption key variable." CX-708C (Acampora WS) at 159; Acampora Tr. 934; Geier Tr. 1197-1198.

Additionally, the PTK is generated based on the ANonce and the BSSID, which are "information pertaining to the predetermined function." *Id.* at 159-162; Geier Tr.1198-1200; CX-383 at Section 8.5.1.2; CX-404C at 10.

The PTK is the dynamic parameter generated by the 4-Way Handshake each time the connection process between the Xbox and router takes place (after an Xbox is powered on). Thus, the PTK is the private call key variable of asserted claim 12.

Step c) of claim 12 recites:

> **c) utilizing the private call key variable to privately communicate with the transmitting communication unit.**

Motorola has satisfied this claim step.

The Xbox operating in conjunction with an 802.11-compliant router, with both set for WPA or WPA2 security, infringes this claim step. The Xbox uses the private call key

variable (the PTK) to privately communicate with the router. CX-708C (Acampora WS) at 162. In particular, per the 802.11 standard, a portion of the PTK called the "temporal key" (TK) is used to encrypt the data that is communicated. CX-708C (Acampora WS) at 162-168; Acampora Tr. 934-935; CX-383 at Section 8.5.1.2, Fig. 8-4 (applicable to WPA encryption), Fig. 8-16 (applicable to WPA2 encryption); CX-365C; CX-654C (Caruana Dep. Tr.) at 70-71; CX-415C; CX-393C at MRVL000687-691; CX-404C at 10-12.

Claim 13

Dependent claim 13 recites:

> **In the method of claim 12, step (b) further comprises generating the, private call key variable by modifying the encryption key variable based on information pertaining to the predetermined function, wherein the information pertaining to the predetermined function includes, at least in part, a unique identification code of the communication unit, a unique identification code of the transmitting communication unit, or a combination of the unique identification code of the communication unit and the unique identification code of the transmitting communication unit.**

Motorola has satisfied this claim.

As discussed above, the Xbox generates the private call key variable (the PTK) by modifying the encryption key variable (the passphrase or, equivalently, the PSK) based on, among other things, the BSSID, which is the unique identification code of the router (the transmitting communication unit). CX-708C (Acampora WS) at 168-169; Geier Tr. 1199; CX-383 at Section 8.5.1.2; CX-404C at 10.

3. Indirect Infringement

Motorola has not shown that Microsoft's accused products indirectly infringe all asserted claims of the '571 patent.

Motorola argues that Microsoft induces infringement and contributes to the infringement of independent claim 12 and dependent claim 13 of the '571 patent, as a result of the direct infringement by users of the Xbox (including Microsoft when it tests the Xbox devices) in its typical arrangement in which the user associates the Xbox with a Wi-Fi router configured to use WPA or WPA2 encryption. Compls. Br. at 180-83.

Microsoft argues that Motorola has not established certain required elements of induced infringement and contributory infringement. Resp. Br. at 10-11.

Motorola has made no argument that Microsoft had knowledge that the claimed methods were "both patented and infringing." *Global-Tech*, 131 S.Ct. at 2062. Further, Motorola has not shown that Microsoft possessed specific intent to encourage another's infringement. *Warner-Lambert*, 316 F.3d at 1364. Though Motorola suggests that the operations on which its expert bases his infringement opinion represent "typical" use of the Xbox, Motorola has not offered any proof that these use-case scenarios are actually "typical" or have ever occurred. Indeed, the accused products have many uses that never involve these operations. For instance, the Xbox can be used with no Internet connection (Acampora Tr. 759-760), or with a wired Internet connection, which is non-infringing. *Id.* 745. Further, even when using WiFi, the Xbox can be used without encryption or with WEP encryption—none of which Motorola accuses of infringement. *Id.* 747.

C. Validity of the '571 Patent

For the reasons set forth below, Microsoft has not shown by clear and convincing

evidence that the asserted claims of the '571 patent are invalid.

1. U.S. Patent No. 5,268,962 ("Abadi") (RX-152)

The Abadi patent does not anticipate claims 12 or 13 of the '571 patent. In addition, Microsoft's argument that Abadi in combination with the Takaragi reference renders claim 13 obvious is without merit. CX-720C (Acampora RWS) at 3-16 and Tab A. Abadi solves a problem very different from the problem addressed by the '571 invention: in a system made up of a network of host computers, each host computer having a number of users, there is a need to separate and isolate communications directed to different users in the system, so that one user cannot access communications intended for another. *Id.* at 3; RX-152 at col. 1, ln. 61 to col. 2, ln. 14, col. 2, lns. 39-53. This informs the approach disclosed in Abadi and results in a disclosure significantly different from the '571 patent. CX-720C (Acampora RWS) at 3-4. Abadi discloses two embodiments, neither of which anticipates the asserted claims of the '571 patent. *Id.* at 4.

First, the preamble of claim 12 of the '571 patent, which the parties agree is a limitation of the claim, requires that "each communication unit of the plurality of communication units stores a limited set of encryption key variables." The parties also agree that this phrase in the preamble requires that the encryption key variables must be stored in non-volatile memory. RX-394 at 19. For both Abadi embodiments, the only encryption keys that Microsoft alleges to be encryption key variables are the "Host-to-Host keys." RX-310 (Geier WS) at 17-18; Geier Tr. 1256-1257. However, those Host-to-Host keys are regenerated each time a host computer is powered on or rebooted, and are not stored in non-volatile memory. CX-720C (Acampora RWS) at 4-5; Geier Tr.

1253-1256; RX-152 at col. 3, ln. 55 to col. 7, ln. 52, col. 8, lns. 11-51 and FIGS. 2, 3, 4, 5A and 5B. Therefore, the preamble of claim 12 does not read on Abadi.

Step (a) of claim 12 also requires that the "identity of an encryption key variable" be sent from one communication unit to another. In the first Abadi embodiment, no such identity is sent. Instead, an encrypted version of the Host-to-Host key itself is sent, then decrypted and temporarily stored in volatile memory. CX-720C (Acampora RWS) at 7; Geier Tr. 1252. Microsoft's proposed claim construction requirement that sending the key itself is the same thing as sending the identity of the key has been rejected. As discussed, *supra*, the '571 patent requires that the encryption key variables are already permanently stored in each communication unit, and the identity that is received by a communication unit is then used to select the previously stored key. Geier Tr. 1247, 1248, 1250. Abadi's first embodiment is completely different: the transmitting host computer sends the key to the receiving host computer, which decrypts the received key to extract a host-to-host key, instead of using the received key to identify a key that is already stored in that unit. RX-152 at col. 6, lns. 29-31; Geier Tr. 1252.

Regarding claim 13, Microsoft argues that a value called the "Buffer Queue Index" (BQI) is the unique identification code of the communication unit. RX-310 (Geier WS) at 22; Geier Tr. 1263. Unlike the unique identification code, which identifies a communication unit, the BQI instead identifies one of the users at the destination host computer, and does not identify the destination host computer itself. Geier Tr. 1257; CX-720C (Acampora RWS) at 13. That is, Abadi teaches that there are multiple users, and therefore multiple BQIs, for a single host computer, so none of the BQIs uniquely identifies the host computer. CX-720C (Acampora RWS) at 13, Acampora Tr. 2314.

Microsoft argues in the alternative it would have been obvious to combine Abadi with the Takaragi reference, discussed *infra*, to supply the unique identification of the communication unit. RX-310 (Geier WS) at 22-23. In the first place, the systems of Abadi and Takaragi are very different. Abadi discloses a switched network of host computers that communicate with one another on a point-to-point basis. Geier Tr. 1266. Each packet of data sent over the network has a destination address in the header of the packet, and switches in the network route the packet so that only the destination host computer, and no other host, receives the packet. RX-152, Fig. 2; Geier Tr. 1265-66. In contrast, as discussed *infra*, the system of Takaragi is a broadcast system, in which any one of a number of terminals broadcasts messages to every other terminal in the system. The other terminals each receive the message, and examine a destination indicator in the message to determine whether or not to decode the message. Geier Tr. 1274. Thus, one of ordinary skill would have little suggestion or motivation to use the destination identification methods of one system in the other, entirely different system. Geier Tr. 1274-1275.

In addition, Microsoft alleges that the "office number" of Takaragi would be the required unique identification of the communication unit. RX-310 (Geier WS) at 22-23. But the office number of Takaragi identifies an office, not a communication unit. CX-720C (Acampora RWS) at 28. In addition, Abadi already uses the destination address of the destination host computer in the header of the packets that it sends during communication. RX-152, FIG. 2, col. 9, lns. 3-4; Geier Tr. 1263-1265. Abadi does not use this unique identification of the communication unit in its algorithm for generating the encryption key used for communication. *Id.* Microsoft fails to explain why one of

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ordinary skill in the art would think to import an office number from the completely different Takaragi system as a substitute for the already-in-place destination address of Abadi.

2. U.S. Patent No. 4,549,308 ("LoPinto") (RX-131)

Microsoft argues that claim 12 is anticipated by the LoPinto patent, and that claim 13 is obvious in light of LoPinto in combination with Abadi or Takaragi. However, neither LoPinto alone, nor in combination with other references, invalidates the '571 patent. CX-720C (Acampora RWS) at 16-23 and Tab B. LoPinto concerns the security of an encryption key used for communications between a cellular radio telephone unit and base stations. LoPinto discloses dynamically changing the encryption key when the cell phone is handed off from one base station to another by mathematically combining a non-broadcast code (NBC) associated with the telephone number with frequency channel values used for the communication. RX-131 at Abstract. The resulting key is then used to encrypt voice communications. CX-720C (Acampora RWS) at 16; RX-131 at col. 1, lns. 56-61.

The plain language of claim 12 of the '571 patent focus on a communication unit, and require that certain actions be performed by that communication unit. LoPinto fails to anticipate claim 12 because neither the mobile phone, nor the base station, nor any other device disclosed in LoPinto, performs all of the actions required by claim 12. CX-720C (Acampora RWS) at 17; Geier Tr. 1267-1268 ("there is no identity [of an encryption key variable] sent from the base station to the telephone"); 1269-1270; Acampora Tr. 2258.

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Considering first the preamble of claim 12, the only point-to-point communication involving a plurality of communication units that Microsoft points to in LoPinto is the communication that takes place between a mobile phone and a base station. RX-310 (Geier WS) at 38. And Microsoft's only candidate for an encryption key variable is the NBC. *Id.* at 37; Acampora Tr. 2255. However, even if it is assumed that the mobile phone stores the NBC in non-volatile memory, the base station does not store that value in non-volatile memory, and indeed it would be impractical in a cellular phone system to attempt to store at each base station all the NBCs for all cell phones that happen to pass through that base station's area. Rather, when a particular cell phone connects to a base station, the base station obtains the NBC from a central "mobile telephone switching office." RX-131 at col. 3, lns. 36-41; RX-310 (Geier WS) at 37; Geier Tr. 1271; CX-720C (Acampora RWS) at 20-21. Because the plurality of communication units identified by Microsoft do not all store encryption key variables, the preamble does not read on LoPinto.

Nor does LoPinto disclose a communication unit that satisfies step (a) of claim 12. That element requires a communication unit to receive, from a transmitting unit, two separate things: the "identity of an encryption key variable," and "information pertaining to a predetermined function." No communication unit in LoPinto receives both. CX-720C (Acampora RWS) at 19-20. Microsoft proposes that the telephone number of the cellular telephone can be the "identity of the encryption key variable," but this is incorrect because the cellular telephone does not use any value received from the base station — whether a telephone number or some other value — to identify the phone's own NBC. RX-131 at col. 3, lns. 24-49; CX-720C (Acampora RWS) at 17-18.

Assuming the frequency channel values could be considered "information pertaining...," the telephone does not send those values to the base station. Microsoft also alleges that certain "change key criteria" that are communicated in the system could be the "information pertaining," but the only example of such change key criteria taught in LoPinto are the frequency values, which as already noted are only sent from the base station to the cellular telephone. CX-720C (Acampora RWS) at 19-20. Thus, neither the cellular telephone nor the base station receives the two required values and thus neither fills the role of the receiving communication unit of claim 12, step (a). *Id.*; Geier Tr. 1267-70.

As to claim 13, LoPinto does not use a unique identification code of a communication unit to generate the private call key variable. Microsoft relies upon combinations of LoPinto with Abadi or Takaragi to fill this gap. RX-310 (Geier WS) at 40-42. This approach is mistaken because the system of LoPinto has no need for the BQI of Abadi or the office number of Takaragi (the values that Microsoft alleges are communication unit identifiers). Moreover, even if a person of ordinary skill were to combine LoPinto with Abadi or Takaragi, the elements cited by Microsoft are not unique identification codes. As described, *supra*, the BQI does not identify a communication unit but instead describes a user. CX-720C (Acampora RWS) at 13; Acampora Tr. 2313-14. Likewise, the "office number" of Takaragi does not uniquely identify a particular communication unit, as explained next. CX-720C (Acampora RWS) at 28.

3. U.S. Patent No. 5,309,516 ("Takaragi") (RX-173)

Microsoft argues that Takaragi anticipates claims 12 and 13 of the '571 patent, and in the alternative Microsoft asserts that claim 13 is rendered obvious by Takaragi in

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combination with Abadi. Neither argument has merit. CX-720C (Acampora RWS) at 23-31 and Tab C.

As a threshold matter, Takaragi is not prior art to the '571 patent because the preparation of the application that issued as the '571 patent, filed July 1, 1993 (and mailed to the Patent Office on June 29, 1993), was ongoing before the June 15, 1993 filing date of the Takaragi patent. The testimony of Dean Banwart (inventor) and Timothy Markison (patent attorney), as corroborated by contemporary records (JX-4 at MOTM_ITC0000144; CX-677C; CX-679C), establishes that the invention was conceived, and a near-final draft of the application prepared, prior to June 15, and that between June 15 and June 29 the application was being finally reviewed by the inventor. CX-709C (Banwart) 5-8; Banwart Tr. 718-19; CX-710C (Markison) 3-7; Markison Tr. 2465-68; CX-677C; CX-679C. Prior conception, accompanied by diligence towards constructive reduction to practice from before the effective date of the prior art reference until the filing date of the patent in suit, takes the reference out of the prior art. *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1576-79 (Fed. Cir. 1996) (finding publication not to be prior art because patentee had shown earlier conception and reasonable diligence in reducing to practice).

Takaragi is thus not prior art because the '571 invention was conceived (and the application in a near-final state) prior to the Takaragi filing date, and the final review of the application during the June 15-29 period shows diligence towards the July 1 filing date.[79] These facts are sufficiently corroborated by contemporaneous documents and the

[79] Even if Mr. Markison had been preparing the application on June 15-17, the last three days during which he could have possibly worked on the application according to his

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testimony of Mr. Banwart and Mr. Markison. *Lacks Indus., Inc. v. McKechnie Vehicle Components USA, Inc.*, 322 F.3d 1335, 1349 (Fed. Cir. 2003) (corroborating evidence of conception "is generally measured under a 'rule of reason' standard" which requires that "an evaluation of all pertinent evidence be made so that a sound determination of the credibility of the evidence may be reached"). Because Motorola has offered evidence to show that Mr. Banwart invented the subject matter of the '571 patent before Takaragi was filed, Motorola has met its burden of production. *Mahurkar*, 79 F.3d at 1577. Microsoft therefore bears the burden of persuasion by clear and convincing evidence that Mr. Banwart did not conceive and thereafter proceed with reasonable diligence as required from before June 15 to the filing date of the '571 patent. *Id.* at 1578. Microsoft has not met this burden.

In any event, Takaragi does not invalidate the '571 patent. Takaragi discloses IC cards (integrated circuit cards) that are inserted into terminal slots and used to encrypt communications between the terminals. CX-720C (Acampora RWS) at 24; Geier Tr. 1277-1278; Acampora Tr. 2263. Each IC card identifies a particular person and a particular office. *Id.* Thus, at different times, a given terminal can be associated with different persons in different offices. *Id.*; RX-173 at Abstract, FIG. 10. A set of master keys is stored in each IC card. CX-720C (Acampora RWS) at 24; Acampora Tr. 2263. Each master key is associated with a particular office or other group of destination terminals. RX-173, col. 5, lns. 40-55. Communications between terminals in the same

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timesheet, this work would be further evidence of due diligence towards reduction to practice. CX-677C.

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office or group use the appropriate master key to encrypt data. CX-720C (Acampora RWS) at 24.

Takaragi does not disclose the requirement in the preamble of claim 12, that the communication units store the encryption key variables. Microsoft cites the master keys used in Takaragi as the encryption key variables, but the master keys are stored on an IC card, which is removable from a communication unit. CX-720C (Acampora RWS) at 27; Acampora Tr. 2263; Geier Tr. 1278.

Also, Takaragi does not disclose the requirement of step (a) of claim 12, that the "identity of an encryption key variable" be received by a communication unit.[80] CX-720C (Acampora RWS) at 225. To initiate an encrypted transmission, a list of all intended receiving persons is generated at the transmitting terminal. RX-173 at col. 7, lns. 11-14. From this, a "destination indicator" is included in each message, which message is transmitted over the communication network to all terminals. Geier Tr. 1274. Microsoft alleges that the destination indicator is the identity of the encryption key variable. RX-310 (Geier WS) at 55. However, the destination indicator does not uniquely identify any master key stored in the IC cards. Rather, the destination indicator is used by an algorithm, depicted in Figure 6 of Takaragi, that selects an appropriate master key. CX-720C (Acampora RWS) at 26-27. Multiple different destination indicators can result in the selection of the same master key.

Microsoft alternatively argues that a value that Takaragi calls the "key information" is the identity of the encryption key variable. RX-310 (Geier WS) at 55.

[80] In addition, Microsoft fails to identify what in Takaragi comprises the alleged "information pertaining to the predetermined function" that is received as required by step (a) of claim 12 of the '571 patent.

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However, as Microsoft's expert admitted, there is nothing in the Takaragi disclosure that supports that position. Geier Tr. 1276-77. The only use of the "key information" disclosed in Takaragi is as undefined "information" used to calculate a group key. RX-173 at col. 2, lns. 26-35.

As to dependent claim 13, the destination indicator of Takaragi is not a unique identification code of a communication unit. Microsoft has at different times identified the office number and/or the person identification number as the unique identification of the communication unit. RX-310 (Geier WS) at 51-52, 57. However, neither value identifies a communication unit. The "office" of Takaragi does not refer to a room, but to a geographical location in a large distributed system. This is confirmed by the fact that one of the offices described in Takaragi is the "head office." RX-173 at col. 5, lns. 24-57, col. 6, lns. 21-41 and FIG. 10; CX-720C (Acampora RWS) at 28-29. Also, the person identification number identifies a person, not a communication unit. CX-720C (Acampora RWS) at 29; Acampora Tr. 2262. The person identified by this combination of numbers can go to any communication unit to receive or send a message with the same group key. Geier Tr.1278. If the combination of the office number and person identification number were truly unique to each communication unit, a user moving between two different communication units would use different group keys. CX-720C (Acampora RWS) at 29.

Microsoft, argues in the alternative that it would have been obvious to combine Takaragi with Abadi to cure this deficiency. In the first place, it is significant that Takaragi discloses a broadcast system, in which every message is sent to every terminal in the system. Geier Tr. 1274-75. Each terminal receives the message, and compares the

information on the IC card currently inserted into that terminal to the destination indicator information in the message. If there is a match, the message is accepted. *Id.* 1274. As discussed in connection with Abadi, *supra*, the point-to-point system of that reference is very different from this broadcast system of Takaragi, and so one of ordinary skill would have no incentive to combine the two references. *Id.* 1266.

And even if a person of ordinary skill were somehow to combine Takaragi with Abadi, the combination still does not cure the other deficiencies of Takaragi regarding other missing claim steps of the '571 patent, such as storing a limited set of encryption key variables, or receiving an identity of an encryption key variable and information pertaining to the predetermined function. In addition, the Buffer Queue Index of Abadi serves a function very different from the unique identification code of a communication unit in the '571 patent. As described above, the Buffer Queue Index does not identify a communication unit but instead describes a user. CX-720C (Acampora RWS) at 13, 29.

4. U.S. Patent No. 5,179,591 ("Hardy") (RX-143)

Microsoft argues that claim 12 is anticipated by the Hardy patent, and that claim 13 is obvious in light of Hardy in combination with Abadi or Takaragi. However, neither Hardy alone, nor in combination with other references, invalidates the '571 patent. CX-720C (Acampora RWS) at 31-37 and Tab D. Hardy concerns a method for secure communication between various types of user equipment employing differing cryptography and/or cipher keys. A manual mode and a public key management mode are disclosed. RX-143 at col. 4, lns. 36-39.

In manual mode, Hardy discloses selecting from preset traffic keys that are "physically transported" and manually installed on each terminal. RX-143 at col. 4, lns.

39-43, col. 7, lns. 32-37; CX-720C (Acampora RWS) at 32-33. This is merely a primitive variation on the stored encryption key approach of the prior art that the '571 patent describes in its background section. Microsoft attempts to portray these stored keys as the encryption key variables of claim 12, but Microsoft does not point to anything in the Hardy disclosure that supports this assertion. RX-310 (Geier WS) at 63. The stored keys are not subjected to the steps of claim 12, and are not used to generate new private call key variables. Geier Tr. 1278-79. Rather the keys are simply used for encryption, just like the prior art systems that the '571 patent improved upon. CX-720C (Acampora RWS) at 33. Microsoft's reliance on the manual embodiment of Hardy goes is erroneous, and Microsoft fails to show any possible way that the claims read on the manual mode of Hardy.

As for the public key mode of Hardy, it also falls short. That mode involves the generation of "traffic keys," used for ciphering, through a message exchange. RX-143 at col. 2, lns. 5-8, col. 2, lns. 50-60; CX-720C (Acampora RWS) at 31-32. The terminals involved in the communication generate and exchange two encrypted random numbers, which are then decoded and combined to create the traffic key used for encryption of the communication. RX-143 at col. 6, lns. 20-58; CX-720C (Acampora RWS) at 31-32.

Considering first the preamble of claim 12, the public key mode of Hardy does not disclose storing a limited set of encryption key variables. CX-720C (Acampora RWS) at 33. The random numbers used to calculate the traffic key are generated on the fly and are not stored in non-volatile storage. RX-143 at col. 6, lns. 20-33; CX-720C (Acampora RWS) at 34; Geier Tr. 1279-80. And they are not stored anywhere in the

receiving communication unit prior to step (a), as required by claim 12. Geier Tr. 1246-48, 1250.

Turning to step (a) of claim 12, no communication unit in Hardy receives an identity of an encryption key variable. CX-720C (Acampora RWS) at 34; Geier Tr. 1279-1280. Microsoft attempts to characterize the transmission of the random numbers during the generation of the traffic key as the transmission of the identity of the encryption key variable. RX-310 (Geier WS) at 71. Microsoft is mistaken, because the random number is not a stored encryption key variable and, even if it were, sending the encryption key variable itself cannot satisfy the requirement of sending *the identity* of the encryption key variable. CX-720C (Acampora RWS) at 34. As discussed, *supra*, the identity of the encryption key variable must be used to identify a previously stored encryption key. The sending of the random number identifies nothing that is previously stored. Geier Tr. 1279-80.

Also lacking in Hardy is the step (a) requirement that the communication unit receive "information pertaining to a predetermined function." Microsoft argues that the "capabilities byte," which is exchanged between the terminals, is the information pertaining to the predetermined function, because it specifies a key generation function. RX-310 (Geier WS) at 71. The key generation function, however, is used not to create the traffic key (which is what Microsoft considers the private call key variable), but is instead used *with* the traffic key to encrypt that data. RX-143 at col. 6, lns. 38-41; Geier Tr. 1280-81; CX-720C (Acampora RWS) at 34-35; Acampora Tr. 2269.

As for dependent claim 13, inasmuch as Hardy does not use the unique identification code of a communication unit to generate the encryption key, Microsoft

argues that it would have been obvious to combine Hardy with Takaragi or Abadi to cure this deficiency. RX-310 (Geier WS) at 72-73; CX-720C (Acampora RWS) at 76. As discussed above, one of ordinary skill would not be motivated to borrow ideas from the approaches of Abadi or Takaragi, and even if that were done, neither the BQI of Abadi nor the office number of Takaragi uniquely identifies a communication unit. CX-720C (Acampora RWS) at 36.

5. U.S. Patent No. 5,146,498 ("Smith") (RX-171)

Microsoft argues that claim 12 is anticipated by the Smith patent, and that claim 13 is obvious in light of Smith in combination with Abadi or Takaragi. CX-720C (Acampora RWS) at 38. Neither Smith alone, nor in combination with other references, invalidates the '571 patent. CX-720C (Acampora RWS) at 37-39 and Tab E. Smith discloses a method for remotely changing an encryption key by sending a key change command from a central controller to a radio. RX-171 at Abstract. The command includes an "Opcode" that specifies operations performed on the present key to cause it to change, and also a data field that contains parameters that may be used by the change operation. For example, the command could indicate that the key is to be "XORed" with a data value sent with the command. RX-171 at FIG. 3.

Although Smith discloses storing an initial key, it does not disclose sending the identity of a stored encryption key for use in generating a new key. Acampora Tr. 2325. Significantly, Smith specifically differentiates its approach from an approach that changes keys by sending the identity of a stored encryption key to the communication device. RX-171 at col. 1, lns. 36-42. Smith explains that the prior art approach is inferior because it takes up "vast amounts of memory." RX-171 at col. 1, lns. 42-45.

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Thus, Smith teaches away from the '571 patent. CX-720C (Acampora RWS) at 37-38; 1286-87 (Smith does not provide a solution to the problem sought to be solved by both Banwart and Smith).

For dependent claim 13, Microsoft argues that it would have been obvious to combine Smith with Abadi or Takaragi to disclose a unique identification code. RX-310 (Geier WS) at 87-89; CX-720C (Acampora RWS) at 38. As discussed above, one of ordinary skill would not be motivated to borrow ideas from the approaches of Abadi or Takaragi, and even if that were done, neither the BQI of Abadi nor the office number of Takaragi uniquely identifies a communication unit. CX-720C (Acampora RWS) at 38.

D. Domestic Industry (Technical Prong)

Motorola's domestic industry products are Droid 2 and Droid X smart phones (collectively, "Droid").

For the reasons set forth below, Motorola has satisfied the technical prong of the domestic industry requirement with respect to the '571 patent.

Claim 12

The preamble of independent method claim 12 recites:

> **In a secure communication system that includes a plurality of communication units, wherein each communication unit of the plurality of communication units stores a limited set of encryption key variables, a method for a communication unit of the plurality of communication units to receive a point-to-point communication within the secure communication system, the method comprises the steps of:**

Motorola has satisfied the preamble.

The claim term "communication unit" has been construed to mean "a unit that

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communicates." The claim term "encryption key variable" has been construed to mean "a dynamic parameter used to reduce unauthorized eavesdropping of transmitted communication in a communication system." The claim term "point-to-point communication" has been construed to mean "secure communication between two or more communication units."

In accordance with the 802.11 standard, when the Droid is used with a router set for WPA or WPA2 security, the Droid and the router are communication units in a secure communication system, with point-to-point communication between the router and the Droid. CX-708C (Acampora WS) at 211-216. The Droid and router store a limited number of encryption key variables, *i.e.*, the passphrase of the router. *Id.* at 212. Also, the Droid stores the passphrase in non-volatile memory. *Id.* at 212.

As it does in the context of infringement, Microsoft disputes that the router is a communication unit, and argues that the passphrase is not an encryption key variable. Microsoft is incorrect for the same reasons as discussed above with respect to infringement.

Step a) of claim 12 recites:

> **a) receiving, by the communication unit, identity of an encryption key variable and information pertaining to a predetermined function, wherein the identity of the encryption key variable and information pertaining to the predetermined function have been transmitted by a transmitting communication unit;**

Motorola has satisfied this claim step.

The claim term "identity of an encryption key variable" has been construed to mean "an identifier that is capable of uniquely identifying which encryption key variable

of the limited set is being used."

As is the case for infringement, the SSID received by the Droid from the router during a probe response is the identity of the encryption key variable, and the BSSID and ANonce received from the router during the 4-Way Handshake make up the information pertaining to the predetermined function. *Id.* at 216-22; CX-365C; CX-437C at 4-8. Microsoft raises the same argument that it does in the infringement context; *viz.*, that the SSID does not uniquely identify the encryption key variable. This argument is incorrect for the same reasons.

Step b) of claim 12 recites:

> **b) generating, by the communication unit, a private call key variable based on the encryption key variable and the information pertaining to the predetermined function; and**

Motorola has satisfied this claim step.

The claim term "private call key variable" has been construed to mean "a dynamic parameter used in a point-to-point communication in a communication system."

The Droid satisfies this claim element in the same way the Xbox infringes it. The PTK is the private call key variable, which is generated form the passphrase, as well as the BSSID and the ANonce. CX-708C (Acampora WS) at 223-25; CX-437C at 8.

Step c) of claim 12 recites:

> **c) utilizing the private call key variable to privately communicate with the transmitting communication unit.**

Motorola has satisfied this claim step.

As is the case for the Xbox's infringement, the Droid uses the PTK in the same

manner to encrypt and decrypt data that is being communicated over the Wi-Fi connection. CX-708C (Acampora WS) at 225-27; CX-365C; CX-437C at 2-4.

Claim 13

Dependent claim 13 recites:

> **In the method of claim 12, step (b) further comprises generating the, private call key variable by modifying the encryption key variable based on information pertaining to the predetermined function, wherein the information pertaining to the predetermined function includes, at least in part, a unique identification code of the communication unit, a unique identification code of the transmitting communication unit, or a combination of the unique identification code of the communication unit and the unique identification code of the transmitting communication unit.**

Motorola has satisfied this claim.

Like for the Xbox, the BSSID is the unique identification of the router. CX-708C (Acampora WS) at 228; CX-383 at Section 8.5.1.2, pp. 198-99; CX-437C at 8.

IX. U.S. Patent No. 5,319,712

U.S. Patent No. 5,319,712 ("the '712 patent") is titled, "Method and Apparatus for Providing Cryptographic Protection of a Data Stream in a Communication System." JX-1 ('712 patent). The '596 patent issued on June 7, 1994, and the named inventors are Louis D. Finkelstein, James J. Kosmach, and Jeffrey C. Smolinske. *Id.* The '712 patent "relates to communication systems and, more particularly, to cryptographic protection within communication systems." *Id.* at col. 1, lns. 7-9 (Field of the Invention).

Motorola asserts independent apparatus claim 6, dependent apparatus claim 8, and independent method claim 17. The asserted claims read as follows:

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6. A transmitting communication unit for providing cryptographic protection of a data stream in a communication system having a physical layer, data link layer, and a network layer, transmitting communication unit comprising a data link layer device having:

(a) assigning means for assigning a packet sequence number to a packet derived from a data stream received from the network layer;

(b) updating means, operatively coupled to the assigning means, for updating a transmit overflow sequence number as a function of the packet sequence number; and

(c) encrypting means, operatively coupled to the assigning means and the updating means, for encrypting, prior to communicating the packet and the packet sequence number on the physical layer, the packet as a function of the packet sequence number and the transmit overflow sequence number.

8. The transmitting communication unit of claim **6** wherein the data link layer device further comprises a buffer means, operatively coupled to the encrypting means, for buffering the encrypted packet and the transmitting communication unit further comprises a physical layer device, operatively coupled to the data link layer device, having transmitting means for transmitting the encrypted packet and the packet sequence number associated with the packet on the physical layer.

17. In a communication system having a physical layer, data link layer, and a network layer, a method for providing cryptographic protection of a data stream, comprising:

(a) assigning a packet sequence number to a packet derived from a data stream received from the network layer;

(b) updating a transmit overflow sequence number as a function of the packet sequence number; and

(c) encrypting, prior to communicating the packet and the packet sequence number on the physical layer, the packet as a function of the packet sequence number and the transmit overflow sequence number.

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JX-1 at col. 7, lns. 36-54; col. 7, ln. 62 – col. 8, ln. 2; col. 8, ln. 65 – col. 9, ln. 12.

A. Claim Construction[81]

1. The preambles of asserted claims 6 and 17

Claim Term	Motorola's Proposed Constructions	Microsoft's Proposed Constructions
the preambles of asserted claims 6 and 17	*The preambles of asserted claims 6 and 17 limit the respective claims*	*The preambles of asserted claims 6 and 17 do not limit the respective claims*

Motorola argues that the preambles of asserted claims 6 and 17 limit the respective claims. Compls. Br. at 206-08. Microsoft argues that the preambles of asserted claims 6 and 17 do not limit the respective claims. Resp. Br. at 26-28.

As proposed by Motorola, the preambles of asserted independent claims 6 and 17 limit the respective claims.

Whether a preamble limits a claim is decided on a case-by-case basis. *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). "If the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999); *see also Corning*

[81] A person of ordinary skill in the art in the July/August 1993 timeframe was typically a person having at least a bachelor's degree in electrical or computer engineering or equivalent and at least three years of experience working in data communications. This would include working in the field of network communications, including cryptographic protection of data within a communication system, and including the hardware and/or software necessary to implement the cryptographic protection of the data. Common systems in this field included cellular systems, paging systems, telephone systems, and wired or wireless data networking systems. CX-708C (Acampora WS) at 15-16.

Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1257 (Fed. Cir. 1989). In addition, "dependence on a particular disputed preamble phrase for antecedent basis may limit claim scope because it indicates a reliance on both the preamble and claim body to define the claimed invention." *Catalina Mktg.*, 289 F.3d at 808.

The preambles of claims 6 and 17 are limiting at least to the extent that they require the claimed communication system to have a physical, data link, and network layer. Housley Tr. 1376 (noting that all elements of claim 6 occur in the data link layer); 1379 (noting that it would be consistent for all steps of claim 17 also to occur in the data link layer). As discussed above, the claims and specification confirm that the inventors regarded the multi-layered OSI model as fundamentally related to their invention, and that an important aspect of their invention was that the elements of the claims are located in the data link layer of the OSI model. CX-711C (Kosmach WS) at 3-4. Indeed, elements (a) and (c) in claims 6 and 17 specifically call out "the network layer" and "the physical layer," with the preamble providing antecedent basis for these terms. *See Pitney Bowes*, 182 F.3d at 1306 ("Because this is the first appearance in the claim body of the term "generated shapes", the term can only be understood in the context of the preamble statement "producing on a photoreceptor an image of generated shapes made up of spots.") By calling out "a communication system having a physical layer, data link layer, and a network layer," the preamble establishes that the claimed system complies with the Open Systems Interconnection standard, and provides antecedent basis for terms appearing in the body of the claims.

In addition, for claim 6, all the elements of the claim are part of "a data link layer device." The phrase, "a data link layer device" is unquestionably part of the required

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elements of the claim, given that the phrase follows the word "comprising" in the preamble. JX-1 at col. 7, lns. 36-54. Claim 8, which depends from claim 6, further confirms that the elements of claim 6 must be part of a data link layer device (*i.e.*, must be in the data link layer) — claim 8 requires that "the data link layer device further comprises a buffer means … for buffering the encrypted packet…," and it goes on to require a separate "physical layer device" that receives the encrypted data from the data link layer device and transmits it. JX-1 at col. 7, ln. 62 to col. 8, ln. 2

Claim 17, being a method claim, does not include the claim 6 phrase, "data link layer device." JX-1 at col. 8, ln 65 to col. 9, ln. 12. However, because claim 17 is the method claim counterpart of apparatus claim 6, with identical structure and wording as to substantive content (*see* CDX-310, reproduced below), and upon consideration of the importance that the specification attributes to operation in the data link layer, one of ordinary skill in the art would conclude that the steps of claim 17 must be performed in the data link layer.

The logical structure of both claims 6 and 17 also confirms that the elements of claim 6 and the steps of claim 17 are each in the data link layer. Element (a) in each claim specifies receipt of a data stream from "the network layer," and element (c) requires that the encrypted data packet be communicated on the physical layer. JX-1 at col. 7, lns. 36-54, col. 8, ln. 65 to col. 9, ln. 12.[82] It follows from the hierarchy of the OSI

[82] The phrase "prior to communicating the packet … on the physical layer" in step (c) only makes sense if encryption must occur before data enters the physical layer. (If encryption could occur in the physical layer, then it goes without saying that encryption must occur before communication). A construction that renders claim language superfluous or meaningless is unsound. *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950 (Fed. Cir. 2006).

model that the actual structure and operations of the elements of the claim take place in the data link layer.

2. "assigning means" (claim 6)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"assigning means" (claim 6) *Function*	*Function*: assigning a packet sequence number to a packet derived from a data stream received from the network layer	
"assigning means" (claim 6) *Structure*	*Structure:* a counter and related structure (116) implemented in hardware and/or software	*Structure: This term is indefinite because the corresponding structure is not sufficiently described in the specification.*

The claim term "assigning means" appears in elements (a), (b), and (c) of claim 6. JX-1.

Both parties construe the function of the term to mean "assigning a packet sequence number to a packet derived from a data stream received from the network layer."

Motorola construes the structure of the term to mean "a counter and related structure (116) implemented in hardware and/or software." Compls. Br. at 209. Microsoft argues that this claim term is indefinite because the corresponding structure is not sufficiently described in the specification. Resp. Br. at 23.

As proposed by both parties, the function of the claim term "assigning means" is construed to mean "assigning a packet sequence number to a packet derived from a data stream received from the network layer."

As proposed by Motorola, the structure of the claim term "assigning means" is construed to mean "a counter and related structure (116) implemented in hardware and/or

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software."

Microsoft asserts that this claim is indefinite because there is insufficient disclosure of structure, but Microsoft is wrong. RRX-24C (Housley RWS) at 44. The structure disclosed in the specification is a counter and related structure (116) implemented in hardware and/or software. CX-708C (Acampora WS) at 76. Column 5, lines 15-17 disclose that "[a] packet sequence number is assigned 116 to each packet of the plurality of packets." JX-1 ('712 patent). FIG. 1 shows block 116, which assigns a sequence number to each packet. *Id.* The specification discloses that when the packet sequence number "rolls over (*e.g.*, indicated by an overflow signal 122), the 24 bit long overflow counter 124 is incremented." JX-1 at col. 3, lns. 65-68. In addition, Figure 1, as described in the specification at column 5, lines 23-28, discloses that the block 116 provides the overflow signal 122 to block 124, and provides a 7-bit sequence number to block 106. Given this explicit disclosure, it would be apparent to a person skilled in the art that block 116 includes a counter that counts the packets sent to it from block 114. CX-708C (Acampora WS) at 76. A counter is the structure that would generate a count, "roll over," and generate a "roll over" signal. *Id.* Counters are well known in the field of data communication systems, and are implemented in hardware and in software. *Id. See Atmel Corp.*, 198 F.3d at 1379-80 (stating that disclosed structure may be implicit in patent's written description if clear to a person of ordinary skill in the art); *Creo Prods., Inc. v. Presstek, Inc.*, 305 F.3d 1337, 1347 (Fed. Cir. 2002). As recently held by the Federal Circuit in *HTC Corp. v. IPCom GmbH & Co., KG*, 2012 WL 254804 at *8 (Fed. Cir. 2012):

> "Whether a specification adequately sets forth structure corresponding to a claimed function is viewed from the perspective of one skilled in the art.... Although the specification here does not literally disclose a processor and transceiver, a person skilled in the art would understand that the mobile device would have to contain a processor and transceiver."

Indeed, Microsoft's own expert agrees that a counter is included in the "assigning means." Housley Tr. 1383.

The implementation of a counter in hardware and/or software is well known to those skilled in the art. CX-708C (Acampora WS) at 78; Housley Tr. 1384. Thus, given the disclosure of a counter, the requirements of Section 112(6) are satisfied. *See Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1365-67 (Fed. Cir. 2003) (holding that the internal circuitry of an electronic device need not be disclosed if one of ordinary skill in the art would understand how to build and modify the device); *S3, Inc. v. NVIDIA Corp.*, 259 F.3d 1364, 1370-71 (Fed. Cir. 2001) (noting that "selector" was an adequate corresponding structure for performing the "selectively receiving" function even though neither the electronic structure of the selector nor details of its electronic operation were described in the specification); *In re Dossel*, 115 F.3d 942, 946-47 (Fed. Cir. 1997) (The structure was determined to be a general-purpose computer, even though the word "computer" was not used in the specification).

A person of ordinary skill in the art would also understand that block 116 includes related structure associated with the counter for assigning the sequence number to the packet.[83] CX-708C (Acampora WS) at 77. Specifically, when block 116 receives a

[83] *See* U.S. Patent Number 5,222,061 (CX-374), issued in June 1993, which discloses the well-known use of a counter and associated circuitry, such as that disclosed in block 116,

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packet, the counter is advanced in response to receipt of the packet, and the new sequence number is presented at the output structure of the counter. *Id.* At this point, the count is assigned to the packet.[84] *Id.*

As discussed, *infra*, Microsoft also argues that the function of the assigning means includes segmentation. RRX-24C (Housley RWS) at 29. Based on that erroneous construction, Microsoft attempts to impose a requirement that, as part of the Section 112(6) analysis of the "assigning means," a structure for segmenting the data stream must be disclosed. However, as demonstrated, *infra*, the function of the assigning means does not include segmentation, and therefore no segmentation structure need be disclosed insofar as this claim element is concerned. Acampora Tr. 983-984.

3. " packet" (claims 6, 8 and 17)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"packet" (claims 6, 8 and 17)	a unit of data that includes a header that is used for identification and routing purposes, conforming to the OSI protocol model	a discrete unit of data derived from a data stream, which includes a header having a "packet sequence number"

The claim term "packet" appears in elements (a) and (c) of independent apparatus

to assign packet sequence numbers to packets. Specifically, "sequence number generator 125" is disclosed as a conventional modulo M counter, which generates packet sequence numbers. The patent explains that "[a]s is well-known, a counter, such as generator 125, advances the value of a current count to a next, succeeding value." *Id.* at col. 3:7-20. This counter is associated with circuitry that "accepts via bus 126 the current value generated by generator 125 and adds the value as a packet sequence number to the latest data packet that controller 120 unloads from transmit buffer." CX-708C (Acampora WS) at 78.

[84] The association of the count to the packet must be maintained as the packet and counter flow through the system, as shown in FIG. 1 of the '712 patent. However, that aspect of system operation is not part of the function of the assigning means, and so is not subject to the Section 112(6) analysis.

claim 6, in dependent claim 8, and in elements (a) and (c) of independent method claim 17. JX-1.[85]

Motorola construes the term to mean "a unit of data that includes a header that is used for identification and routing purposes, conforming to the OSI protocol model." Compls. Br. at 211. Microsoft construes the term to mean "a discrete unit of data derived from a data stream, which includes a header having a 'packet sequence number'." Resp. Br. at 28.

As proposed by Motorola, the claim term "packet" is construed to mean "a unit of data that includes a header that is used for identification and routing purposes, conforming to the OSI protocol model."

The materials submitted with the '712 patent application confirm that a packet is a unit of data that includes a header that is used for identification and routing purposes. JX-2 at MOTM_ITC0000086, 91-92. In the '712 patent, packets conform to the OSI model. JX-1 at col. 2, lns. 55-57, col. 3, lns. 59-65. Reference to the standards document that defines the OSI Model confirms that data is communicated via the OSI model in packets (which the OSI model refers to as "data units") with headers that include identification and routing information (which the OSI model refers to as "control information"). CX-369 at Section 5.6; CX-708C (Acampora WS) at 74.

Microsoft's proposed definition unnecessarily incorporates the limitation "having a 'packet sequence number,'" but this limitation is already imposed by the claim language itself. RRX-24C (Housley RWS) at 26. Additionally, Microsoft's definition fails to acknowledge that the claimed inventions are strictly confined to the OSI model.

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[85] The term also appears in non-asserted claims. JX-1.

CX-711C (Kosmach WS) at 4. Microsoft's definition would embrace systems well outside of the OSI model that did not have packet headers used for identification and routing purposes.

4. " packet sequence number" (claims 6, 8 and 17)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"packet sequence number" (claims 6, 8 and 17)	a multi-bit incrementing number that is transmitted along with the "packet"	a multi-bit incrementing number assigned to sequence "packets" during reassembly that is transmitted along with the "packet"

The claim term "packet sequence number" appears in elements (a), (b), and (c) of independent apparatus claim 6, in dependent claim 8, and in elements (a), (b), and (c) of independent method claim 17. JX-1.[86]

Motorola construes the term to mean "a multi-bit incrementing number that is transmitted along with the 'packet'." Compls. Br. at 212. Microsoft construes the term to mean "a multi-bit incrementing number assigned to sequence 'packets' during reassembly that is transmitted along with the 'packet'." Resp. Br. at 24.

As proposed by Motorola, the claim term "packet sequence number" is construed to mean "a multi-bit incrementing number that is transmitted along with the 'packet'."

Motorola's construction is consistent with the patent claims and use of the term in the specification. JX-1 at col. 3, lns. 62-65, col. 5, lns. 29-32 ("The encrypted plurality of packets and the packet sequence number associated with each packet are transmitted on the physical layer…."); CX-708C (Acampora WS) at 74-75.

[86] The term also appears in non-asserted claims. JX-1.

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Microsoft's proposed construction, however, improperly limits a "packet sequence number" to a particular *use* ("to sequence 'packets' during *reassembly*") that is not part of the claim. *See Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001) ("Where the function is not recited in the claim itself by the patentee, we do not import such a limitation."). The "packet sequence number" is generated and assigned to a packet, prior to movement of the packet from "layer 2" to "layer 1," for transmission. JX-1 ('712 patent) at Fig. 1 (102). The claims at issue do not address how information is processed *after* transmission when it is *received* from layer 1, much less how data is reassembled or whether the same sequence number used for encryption is used for reassembly.

Significantly, the specification explains that, in one embodiment, the sequence number is *not used for reassembly* because "the Layer 2 receiving portion ... expects to receive the segments (packets) in sequence." JX-1 at col. 4, lns. 53-55; Acampora Tr. 790-791 ("There may be no resequencing. The packets may have arrived in order."), 792. Terms should not be construed to exclude disclosed embodiments. *Oatey Co. v. IPS Corp.*, 514 F. 3d 1271, 1276 (Fed. Cir. 2008) ("We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification").

In addition, non-asserted claim 5 element (j) of the '712 patent specifically requires that the sequence number be used to reorder the received packets. JX-1 at col. 6, ln. 53 to col. 7, ln. 34. The basic rule of claim differentiation dictates that Microsoft's attempt to read limitations of claim 5 into the asserted claims is improper. *Karlin Tech.*, 177 F.3d at 971-72.

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5. **" assigning a packet sequence number to a packet derived from a data stream received from the network layer" (claims 6 and 17)**

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"assigning a packet sequence number to a packet derived from a data stream received from the network layer" (claims 6 and 17)	assigning a packet sequence number to a packet formed or developed from a data stream received from the network layer	assigning a "packet sequence number" to a "packet" created by segmenting a "data stream" received from the network layer

The claim term "assigning a packet sequence number to a packet derived from a data stream received from the network layer" appears in element (a) of independent apparatus claim 6 and independent method claim 17. JX-1.[87]

Motorola construes the term to mean "assigning a packet sequence number to a packet formed or developed from a data stream received from the network layer." Compls. Br. at 213. Microsoft construes the term to mean "assigning a 'packet sequence number' to a 'packet' created by segmenting a 'data stream' received from the network layer." Resp. Br. at 19.

As proposed by Motorola, the claim term "assigning a packet sequence number to a packet derived from a data stream received from the network layer" is construed to mean "assigning a packet sequence number to a packet formed or developed from a data stream received from the network layer."

Motorola's proposed definition is consistent with the claim language, only elaborating on the word "derived" as used in its ordinary English language sense: "formed or developed out of something else," *i.e.*, the packet is formed or developed

[87] The term also appears in non-asserted claims. JX-1.

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from the data stream received from the network layer. *See* CX-371, Webster's Third New International Dictionary (Unabridged) (2002); CX-708C (Acampora WS) at 75. Microsoft asserts that the patentee intended to limit the term "derived from" to mean "segmenting." RRX-24C (Housley RWS) at 31. Microsoft points to the use of the word "segment" in the specification and argues that the patentee meant to use it to be synonymous with the claim term "derived." RRX-24C (Housley 31). But, as the Federal Circuit recently held, for a patentee to redefine a term from its plain and ordinary meaning, "[i]t is not enough for [the] patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must "clearly express an intent" to redefine the term." *Thorner v. Sony Computer Entm't*, 2012 WL 280657 at *2 (Fed. Cir. 2012).

"Segmenting" is not a requirement of the asserted claims. Housley Tr. 1399 (noting that "segmenting" does not appear in the asserted claims); Acampora Tr. 983-986. Significantly, claim 5, which is not asserted, specifically requires "segmenting a data stream … into a plurality of packets" before the limitation of "assigning a packet sequence number …." Housley Tr. 1401-1402 (noting that "segmenting" appears in claim 5); Acampora Tr. 987. Again, as discussed, claim differentiation dictates that Microsoft's construction is unsound. There is no reason, for example, why the data stream received from Layer 3, the Network Layer, cannot already be segmented, rendering it unnecessary to further segment that data in Layer 2. The OSI standard specifically provides for segmenting in Layer 3. CX-369 at 44-45. Indeed, Mr. Housley agreed that segmenting can occur in OSI layer 3. Housley Tr. 1404; 1407-1408; Acampora Tr. 834.

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Microsoft attempts to support its segmentation argument by referring to the language in this claim element, "derived from a data stream." RRX-24C (Housley RWS) at 26. Microsoft argues that this is part of the function performed by the assigning means structure. Microsoft is mistaken. This language specifies the source of the packet. The actual function performed by the assigning means is simply assigning a packet sequence number to that packet. CX-708C (Acampora WS) at 75.

6. "data stream" (claims 6 and 17)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"data stream" (claims 6 and 17)	*No construction necessary.* *If construed:* a flow of data	non-packetized data

The claim term "data stream" appears in the preamble and element (a), of independent apparatus claim 6, and of independent method claim 17. JX-1.[88]

Motorola argues that no construction is necessary for this claim term. In the alternative, Motorola construes the term to mean "a flow of data." Compls. Br. at 214. Microsoft construes the term to mean "non-packetized data." Resp. Br. at 28.

The administrative law judge agrees with Motorola that the claim term "data stream" need not be construed.

Indeed, Microsoft appears to agree that no construction is necessary for this claim term. Resp. Br. at 28 ("Motorola insists on construing this term, although Microsoft does not belief that infringement turns on the construction of this term."). Curiously, however, Microsoft also proposes the term to mean "non-packetized data."

[88] The term also appears in non-asserted claims. JX-1.

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In any event, the claim term "data stream" carries its plain and ordinary connoting a stream of data.

Microsoft's proposed construction is misguided. Microsoft is under the misimpression that the data stream that comes from the Network Layer in the preferred embodiment must be non-packetized. RRX-24C (Housley RWS) at 29. Microsoft presumably bases this misimpression on the fact that, in the preferred embodiment, the data stream from Layer 3 is segmented into packets after it is received by Layer 2. JX-1 at col. 3, lns. 62-64. Microsoft thus attempts to import this aspect of the preferred embodiment into its construction of data stream. However, as discussed in the previous section, the asserted claims do not require segmentation in Layer 2, and thus Microsoft's construction of "data stream" is rejected.

7. "updating means" (claim 6)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"updating means" (claim 6) *Function*	*Function:* updating a transmit overflow sequence number as a function of the packet sequence number	
"updating means" (claim 6) *Structure*	*Structure:* overflow counter (124)	*Structure: This term is indefinite because the corresponding structure is not sufficiently described in the specification*

The claim term "updating means" appears in elements (b) and (c) of independent apparatus claim 6. JX-1.[89]

Both parties construe the function of the term to mean "updating a transmit

[89] The term also appears in non-asserted claims. JX-1.

overflow sequence number as a function of the packet sequence number."

Motorola construes the structure of the term to mean "overflow counter (124)." Compls. Br. at 216. Microsoft argues that this term is indefinite because the corresponding structure is not sufficiently described in the specification. Resp. Br. at 24.

As proposed by both parties, the function of the claim term "updating means" is construed to mean "updating a transmit overflow sequence number as a function of the packet sequence number."

As proposed by Motorola, the structure of the claim term "updating means" is construed to mean "overflow counter (124)."

Microsoft's assertion that this element is indefinite because there is insufficient disclosure of structure fails. RRX-24C (Housley RWS) at 33. Microsoft's expert agrees that the structure explicitly disclosed for the updating means is the overflow counter (124). Housley Tr. 1409–10. FIG. 1 discloses an overflow counter (124) that is updated when the packet sequence rolls over. JX-1, FIG. 1. "When SN 116 rolls over (*e.g.*, indicated by an overflow signal 122), the 24 bit long overflow counter 124 is incremented." JX-1 at col. 3, lns. 66-68. As discussed above in Section II.H.2(b), counters are common, well known components that can be implemented in hardware and/or software. CX-708C (Acampora WS) at 76. Given disclosure of a well-known electronic component, the requirements of Section 112(6) are satisfied. CX-708C (Acampora WS) at 81.

8. "transmit overflow sequence number" (claims 6 and 17)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction

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"transmit overflow sequence number" (claims 6 and 17)	*No construction necessary.* *If construed:* a finite multi-bit incrementing number that updates when the packet sequence number rolls over	a multi-bit number that counts the number of times that a "packet sequence number" rolls over, which is used in the transmitter but is not transmitted to the receive unit

The term "transmit overflow sequence number" appears in elements (b) and (c), of independent apparatus claim 6, and of independent method claim 17. JX-1.[90]

Motorola construes the term to mean "a finite multi-bit incrementing number that updates when the packet sequence number rolls over." Compls. Br. at 217. Microsoft construes the term to mean "a multi-bit number that counts the number of times that a 'packet sequence number' rolls over, which is used in the transmitter but is not transmitted to the receive unit." Resp. Br. at 13.

As proposed by Microsoft, the claim term "transmit overflow sequence number" is construed to mean "a multi-bit number that counts the number of times that a 'packet sequence number' rolls over, which is used in the transmitter but is not transmitted to the receive unit."

Properly construed, the transmit overflow sequence number cannot be sent to the receiver. Motorola's construction should be rejected because (1) the intrinsic evidence expressly requires a "transmit" overflow sequence number, not just an "overflow" sequence number, and the patent solely, and repeatedly, indicates the number is not transmitted; (2) its inventors, during prosecution to secure allowance of nearly identical claims, unequivocally characterized their invention as not transmitting this number; (3) one of the inventors, during litigation, indicated the number is not sent in order to

[90] The term also appears in non-asserted claims. JX-1.

enhance security; (4) Judge Crabb rejected Motorola's construction; (5) Judge Posner rejected Motorola's construction; and (6) Motorola's expert never considered the inventors' characterizations of the invention during prosecution in Japan, and indeed, Motorola chose to not even provide these characterizations to Motorola's expert.

Microsoft's construction of "transmit overflow sequence number" as a number that is not sent to the receiver is correct. The asserted claims do not require just any "overflow sequence number" – they require a "transmit overflow sequence number." JX-1 at col. 7, lns. 44-47; col. 9, lns. 5-6. Indeed, Motorola concedes that, in claim 1, the "transmit" overflow sequence number is not sent to the receiver.

> Motorola distinguished the invention of claim 1 on several grounds, including the fact that the overflow sequence number is not transmitted. *This is a correct statement for claim 1.*

337-TA-752, Motion 752-025, 2011 WL 6819246, at *9 (Nov. 28, 2011) (emphasis added). A term that is used in several claims is presumed to have the same meaning across all claims. *See Georgia Pacific Corp. v. United States Gypsum Co.*, 195 F.3d 1322, 1331 (Fed. Cir. 2000).

In addition, claims 11 and 18, which are both directed to the receiver, recite "updating a *receive* overflow sequence number" after "extracting a packet sequence number from the physical layer." JX-1 at col. 8, lns. 19-24 (emphasis added); col. 10; lns. 5-8 (emphasis added). The receive overflow sequence number is created in the receiver based on the packet sequence number because only the packet sequence number is transmitted; the transmit overflow sequence number is not. Acampora Tr. 795-796; RRX-24C (Housley RWS) at 35-37. In fact, *asserted* claims 6 and 17 only recite

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transmitting the packet sequence number, not the transmit overflow sequence number. JX-1 at col. 7, lns. 49-51; col. 9, lns. 7-9. The patent claims recite three different elements, the "packet sequence number," the "transmit overflow sequence number" and the "receive overflow sequence number," each with its own distinct characteristics: the packet sequence number is transmitted; the transmit overflow sequence number is not, and the receive overflow sequence number is updated based on the received packet sequence number.

The specification also compels Microsoft's construction. FIG. 1, reproduced below, shows the transmitter 102 on the left and the receiver 104 on the right:

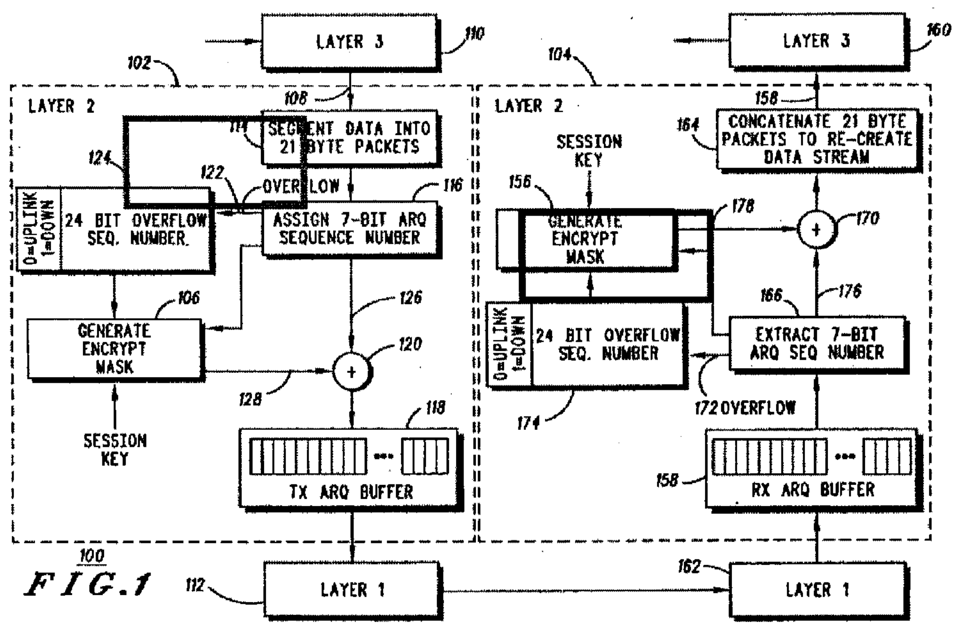

FIG. 1

The transmit overflow sequence number 124 (highlighted in green) used in the transmitter 102 is distinct from the receive overflow sequence number 174 (highlighted in red) used in the receiver 104. Rather than use a single "overflow sequence number," the specification consistently uses the term "transmit overflow sequence number" to refer to

the number in the transmitter (JX-1 at col. 2, lns. 27-29; col. 3, lns. 65-68; col. 5, lns. 17-19), as opposed to the "receive overflow sequence number" which is consistently described as being calculated by the receiver from the received packet sequence number. JX-1 at col. 2, lns. 35-37; col. 4, lns. 14-17; col. 5, lns. 41-43; RRX-24C (Housley RWS) at 35-37. Critically, Motorola's expert concedes that the transmit overflow sequence number is not transmitted in Figure 1:

> A. … the description of figure 1 does not include in this preferred embodiment the accompanying transmission of the transmit overflow sequence number. I agree with that.
>
> …
>
> Q. … Answer: In figure 1, the transmit overflow sequence number is not transmitted; that's correct."
>
> A. That's what I just said, yes.

Acampora Tr. 785. Acampora acknowledged that there is no disclosure in the specification that the transmit overflow sequence number is ever transmitted. Indeed, the only portion of the patent specification that he could point to in support of Motorola's position is the boilerplate language at "column 5, beginning line 55." *Id.* 812-813; JX-1 at col. 5, lns. 55-65. But there is no mention of transmitting the number in this passage. Acampora Tr. 813-818.

The inventors made very clear that the claimed "transmit overflow sequence number" is *never* transmitted to the receiver. Specifically, in response to a Japanese Office Action rejecting the application, which contained claims identical in substance to

claims 6 and 17,[91] Motorola argued:

> Additionally, the aforementioned overflow sequence numbers are absolutely not communicated to the ends of the communication route, they are not embedded in the data packets, nor may they be deduced from data embedded in the data packets. The aforementioned overflow sequence numbers are determined independently by both the communication device for transmission and the communication device for reception. Unlike keys, or unlike the packet sequence numbers, there is no danger of interception of the overflow sequence numbers, and they provide an even higher level of security.
>
> Therefore, using packet sequence numbers and overflow sequence numbers for encrypting/decoding data could not have easily been thought of by one skilled in the art based on the aforementioned cited example, and it is clear that they are not simply one selection of the many variables used as keys. Therefore, the invention described in Claim 1, and in Claims 2-4 that are dependent on said Claim 1, in the application clearly could not easily have been invented by one skilled in the art based on the aforementioned cited example.

RX-343 at 0019 (emphases added). Contrary to Motorola's contention that its statements do not apply to the claims at issue here, Motorola represented to the Japanese government:

> Additionally, Claims 5, 7, 9 and 10 of the application also provide encryption/decoding technology that uses packet sequence numbers and communication overflow sequence numbers, in addition to session keys, for encrypting/decoding data. Therefore, for the same reasons as stated above, we think that the inventions described in these claims also could not easily have been invented by one skilled in the art based on the aforementioned cited example.

[91] Claims 5 and 9 of the Japanese Application are substantively identical to asserted claims 6 and 17 of the '712 patent, respectively. *See* RX-343 at 0025-27. While there are slight differences in the wording of the claims of the Japanese Application and the claims of the '712 patent, these differences do not affect the substance of the claims.

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RX-343 at 0019 (emphases added). Then, during appeal proceedings, Motorola again argued that the overflow sequence number is not sent to the receiver and explained the benefits of not transmitting it:

> The invention in the application relates to a method and communication devices to provide protection using data stream ciphers in a communication system that has a physical layer, a data link layer, and a network layer. It is characterized by the fact that, by using <u>overflow sequence numbers that are not sent from one end of the communication route to the other end</u>, the communication device for reception and the communication device for transmission can each <u>independently execute an algorithm for the overflow sequence numbers</u>, independently of the output of the algorithm executed by the other communication device, and without knowing that output.

RX-343 at 0051 (emphases added).

* * *

> … the applicant stated that in the invention in this application, the overflow sequence numbers are determined based on rollover of the packet sequence numbers, the <u>overflow sequence numbers are determined and maintained internally in each device, and are not communicated outside of either device</u>, and <u>interception can therefore be prevented</u>. That is, <u>even if a specific packet is intercepted, the overflow sequence numbers used for encrypting and decoding the packet cannot be detected</u>. The overflow sequence numbers are absolutely not embedded in the packets, and unless the sequence number rolls over, the packet sequence number will not be deduced from other data in a specific packet (singular or multiple).

RX-343 at 0051-52 (emphases added).

Inventor Finkelstein agreed that not sending the transmit overflow sequence number enhances security:

> A. In this particular embodiment you have the seven bits of the sequence number that go over the – over the

> physical link. So they're in some sense available. But the other information is not. The overflow number is not. And therefore, that's more secretive – more unknown information at the time going to the encryption algorithm that generated the encryption mask.
>
> And that – that means that somebody would have to in some sense guess what – what the overflow sequence number is as opposed to being given it.

RX-185C at 0029-30. Motorola cannot rely on one position to obtain a patent and take the opposite position in litigation.

Further, two courts have fully considered the record and held that the transmit overflow sequence number is not sent. Judge Crabb in the Western District of Wisconsin rendered a Markman decision, holding that "the overflow sequence number is never transmitted to the receiver." RRX-72 at 0022-30 (*Apple, Inc. v. Motorola, Inc.*, 3:10-cv-662-bbc (WD Wis. Oct. 13, 2011)). As Judge Crabb explained, "[Motorola] made statements confirming that it designed the claimed method of the '712 patent to exclude transmission of the transmit overflow sequence number in order to increase the efficiency and security of transmission." RRX-72 at 0024-25. After the case was transferred to the Northern District of Illinois, Judge Posner fully considered the record, adopted Judge Crabb's construction, and rendered summary judgment of non-infringement of Apple's WPA-based products. RRX-116 at 1-3 (*Apple, Inc. v. Motorola, Inc.*, 1:11-cv-08540 (ND Ill. Jan. 16, 2012)). Judge Posner held that the accused WPA products do not infringe Motorola's '712 patent because "the extended initialization value in WPA is transmitted (and it is the only structure that is potentially analogous to the patented transmit overflow sequence number)." RRX-116 at 2. Judge Posner explained:

"Motorola told that office that 'unlike the key or the packet sequence number, there is no chance to intercept the overflow sequence number [a reference to the "transmit overflow sequence number" in the '712 patent]; thus it provides a higher level of security' – no chance because that number is never transmitted, unlike its counterpart in Apple's devices that are alleged to infringe." RRX-116 at 2.[92] Further, despite being aware of the Japanese foreign prosecution from two separate litigations, Motorola did not provide these documents to Dr. Acampora.

9. "encrypting means" (claims 6 and 8)

Claim Term	Motorola's Proposed Construction	Microsoft's Proposed Construction
"encrypting means" (claims 6 and 8) *Function*	*Function:* encrypting ... the packet as a function of the packet sequence number and the transmit overflow sequence number	
"encrypting means" (claims 6 and 8) *Structure*	*Structure:* exclusive-or operator (120)	*Structure: This term is indefinite because the corresponding structure is not sufficiently described in the specification.* *In the alternative, the corresponding structure is:* an exclusive-or operator (120) with a pseudo-random bit generator (106).

The claim term "encrypting means" appears in element (c) of independent apparatus claim 6, and in dependent claim 8. JX-1.

Both parties construe the function of the term to mean "encrypting ... the packet

[92] The WD Wis. Markman and ND Ill. summary judgment decisions were rendered after Motorola had a full and fair opportunity to litigate the construction it presents here. Courts have found collateral estoppel under similar circumstances. *See Certain Electronic Devices with Multi-touch Enabled Touchpads and Touchscreens*, 337-TA-714, Order No. 16 at 3 (Sept. 28, 2010) (Initial Determination Finding Complainant Collaterally Estopped From Certain Pleadings).

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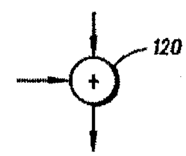
as a function of the packet sequence number and the transmit overflow sequence number."

Motorola construes the structure of the term to mean "exclusive-or operator (120)." Compls. Br. at 225. Microsoft argues that this term is indefinite because the corresponding structure is not sufficiently described in the specification. In the alternative, Microsoft construes the structure of the term to mean "an exclusive-or operator (120) with a pseudo-random bit generator (106)." Resp. Br. at 21.

As proposed by both parties, the function of the claim term "encrypting means" is construed to mean "encrypting ... the packet as a function of the packet sequence number and the transmit overflow sequence number."

As proposed by Motorola, the structure of the claim term "encrypting means" is construed to mean "exclusive-or operator (120)."

Microsoft is wrong in both facets of its two-pronged construction. The '712 patent explicitly discloses structure, the exclusive-or operator (120), for performing this function. CX-708C (Acampora WS) at 83. As disclosed at column 3, lines 59-61, the patent unambiguously states that "encipherment (120) is performed (*e.g.*, an exclusive-or operation of the packetized data stream 126 with the encryption mask 128) on [the data]." *See also* JX-1 ('712 patent), col. 4, lns. 5-6 ("encryption 120"), col. 5, ln. 24 ("encrypted 120"). In addition, Figure 1 of the patent explicitly depicts the structure 120 that performs the XOR operation as the XOR gate symbol. There is no dispute that the XOR gate is a well-known structure.



Microsoft's alternative position that the encrypting means is the pseudo-random bit generator 106 *plus* the exclusive-or operator 120 also fails. The specification

identifies *only* the XOR operation as "encryption 120" or "encipherment 120." JX-1 ('712 patent), col. 3, ln. 59, col. 4, lns. 5-6, col. 5, ln. 24. If the patent intended to include more than the exclusive OR operator, the term "encryption" or "encipherment" would not have been used solely to describe exclusive-or 120.

Moreover, the pseudo-random bit generator is not used to perform the claimed function of "encrypting." Rather this component performs the unclaimed act of generating an encrypt mask, *which occurs prior* to encryption and is used as an *input* by the structure that actually performs the encryption, the exclusive-or operator. JX-1 ('712 patent) at col. 3, lns. 32-38; CX-708C (Acampora WS) at 32-33. Because the pseudo-random bit generator is not necessary for performing the claimed function, but merely generates an input to the structure that performs the function, it should not be included in the claimed structure. *See Asyst Techs., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1370-1371 (Fed. Cir. 2001) (finding communication cable not corresponding structure because it did not actually perform the functions of "controlling" and "transmitting," despite the fact that it conveyed the information to be "controlled" and "transmitted").

In any event, whether the corresponding structure is the exclusive-or operator (120) alone, or coupled with a pseudo-random bit generator, the requirements of Section 112(6) are satisfied. Exclusive-or operators and pseudo-random bit generators are well known electronic components, and can be implemented in hardware or software in well known, standard ways. Housley Tr. 1367-69, 1419-1420; Acampora Tr. 840-841 ("[O]ne of skill in the art would know that ... any of many known algorithms that accept some inputs could have been used."); CX-708C (Acampora WS) at 34. *See Atmel Corp.*, 198 F.3d at 1379-80 (stating that disclosed structure may be implicit in patent's written

description if clear to a person of ordinary skill in the art); *Creo Prods.*, 305 F.3d at 1347.

B. Infringement Analysis of the '712 Patent

Microsoft argues that Motorola has failed to show that anyone has ever performed the method steps of claim 17 of the '712 patent. Resp. Br. at 10. According to Microsoft, it is not enough to show that a particular article is capable of performing the claimed steps; instead, the patentee must show that each step is actually performed in the United States. *Id.* citing *Joy Techs.*, 6 F.3d at 775. Microsoft's argument is rejected.

As is the case for the '571 patent, *supra*, Motorola's infringement claims for the '712 patent are based, in part, on the Xbox's implementation of the IEEE's 802.11 Wi-Fi standard, and the normal use of the Xbox with Wi-Fi in a home environment. CX-708C (Acampora WS) at 86-95, 182-83 As discussed above for the '571 patent, the record establishes that the Xbox products are compliant with the IEEE 802.11 standard, and that the 802.11-2007 standards document (CX-383) describes the Xbox for the purposes pertinent to this investigation. *Id.*; RX-314C at 8; Housley Tr. 1345-1346.

1. Accused Products

Motorola argues that the accused products are Microsoft's Xbox 360 console, including the Xbox 360 S 4 GB and 250 GB consoles, as well as the Xbox 360 Wireless N Adapter (collectively, "the Xbox"), imported into the United States, and/or sold after importation. Compls. Br. at 226-27 citing CX-708C (Acampora WS) at 86 and Tab E.

Microsoft argues that Motorola failed to provide any evidence that the accused products that contain Atheros chips infringe the '712 patent. Resp. Br. at 8-10.

In connection with the accused products for the '571 patent, *supra*, the undersigned found that Microsoft is precluded from arguing that Xbox products containing [ ] chips should be determined to be non-infringing. For the same reasons, the administrative law judge is not making any factual findings on whether Xbox products containing [ ] chips are non-infringing.

2. Direct Infringement

For the reasons set forth below, Motorola has not shown that Microsoft's accused products directly infringe all asserted claims of the '712 patent.

Claim 6

The preamble of independent apparatus claim 6 recites:

> **A transmitting communication unit for providing cryptographic protection of a data stream in a communication system having a physical layer, data link layer, and a network layer, transmitting communication unit comprising a data link layer device having:**

Motorola has established that this claim limitation is satisfied.

The Xbox literally infringes the preamble of claim 6. When communicating with a router set for WPA/TKIP security, the Xbox is a transmitting communication unit. CX-708C (Acampora WS) at 187. Per 802.11, the Xbox and router are part of a communication system having physical, data link, and network layers. CX-708C (Acampora WS) at 98, 187-88; CX-383 at Section 5.7 ("This standard presents the architectural view, emphasizing the separation of the system into two major parts: the MAC of the data link layer (DLL) and the PHY."); Acampora Tr. 746. The data link layer (*i.e.*, the upper boundary of the 802.11 LLC) interfaces with Layer 3 of the OSI

model and accepts Layer 3 formatted information. CX-393C; CX-656C (Lambert Dep. Tr.) at 111-12; CX-400C. Microsoft's expert, Mr. Housley, admits that TKIP occurs in layer 2. Housley Tr. 1379.

The first element of claim 6 recites:

> **(a) assigning means for assigning a packet sequence number to a packet derived from a data stream received from the network layer;**

Motorola has established that this claim limitation is satisfied.

As proposed by both parties, the function of the claim term "assigning means" has been construed to mean "assigning a packet sequence number to a packet derived from a data stream received from the network layer." As proposed by Motorola, the claim term "packet sequence number" has been construed to mean "a multi-bit incrementing number that is transmitted along with the 'packet'." As proposed by Motorola, the structure of the claim term "assigning means" has been construed to mean "a counter and related structure (116) implemented in hardware and/or software." As proposed by Motorola, the claim term "assigning a packet sequence number to a packet derived from a data stream received from the network layer" has been construed to mean "assigning a packet sequence number to a packet formed or developed from a data stream received from the network layer."

The Xbox literally infringes this element. Per 802.11, when using TKIP, data packets called MPDUs (MAC Protocol Data Units) derived from a data stream received from the network layer are provided to the Xbox's Wi-Fi chip. CX-708C (Acampora WS) at 189. The chip generates a 2-byte sequential count, comprising "TSC0" and "TSC1," which increments for each MPDU. *Id.* at 189-90; Housley Tr. 1386-89. This is

a packet sequence number (the "IV sequence number"). Housley Tr. 1388-89; Acampora Tr. 844; CX-383 at Sections 3.82, 8.3.2.1, 8.3.2.2.

The structure performing this function mirrors that disclosed in the '712 patent. In both cases, a counter and related structure, implemented in circuitry and software, associates the count and the packet. CX-708C (Acampora WS) at 190-94; CX-404C at 13-15; Housley Tr. 1383 (agreeing that the assigning means includes a counter); CX-656C (Lambert Dep. Tr.) at 63-64. The source code of the Xbox confirms this. CX-404C at 13 (describing how the Marvell chip includes a [ ] that generates a [ ] that [ ] for each MPDU that is processed, and illustrating code that implements [ ].

The second element of claim 6 recites:

> **(b) updating means, operatively coupled to the assigning means, for updating a transmit overflow sequence number as a function of the packet sequence number; and**

Motorola has not established that this claim limitation is satisfied.

The claim term "transmit overflow sequence number" has been construed to mean "a multi-bit number that counts the number of times that a 'packet sequence number' rolls over, which is used in the transmitter but is not transmitted to the receive unit."

There is no dispute that the accused extended initialization vector (IV) portion of the TKIP Sequence Counter (TSC) (i.e., TSC bytes 2-5) *is* transmitted to the receiver. *See* Acampora Tr. 830 ("Q. Okay. And just so the record is clear, TSC bits 2, 3, 4 and 5 are sent in an Xbox to the router, right? A. That's correct. Q. They're actually transmitted? A. They're sent from the Xbox to the router; that's correct."). This

precludes infringement under the proper construction of "transmit overflow sequence number." Motorola does not contend the limitation is met under the doctrine of equivalents. *Id.* at 800.

The third element of claim 6 recites:

> **(c) encrypting means, operatively coupled to the assigning means and the updating means, for encrypting, prior to communicating the packet and the packet sequence number on the physical layer, the packet as a function of the packet sequence number and the transmit overflow sequence number.**

Motorola has not established that this claim limitation is satisfied.

The "encrypting means" of this element is "operatively coupled" to the "updating means," which is the second element above. Inasmuch as Motorola has not satisfied the second element ("updating means") of claim 6, it cannot show that the accused products infringe the third element ("encrypting means") of claim 6.

Claim 8

Dependent apparatus claim 8 recites:

> **The transmitting communication unit of claim 6 wherein the data link layer device further comprises a buffer means, operatively coupled to the encrypting means, for buffering the encrypted packet and the transmitting communication unit further comprises a physical layer device, operatively coupled to the data link layer device, having transmitting means for transmitting the encrypted packet and the packet sequence number associated with the packet on the physical layer.**

Motorola has not established that the limitations of this claim are satisfied. Inasmuch as Motorola is unable to show that the accused Microsoft devices infringe

independent claim 6, it cannot show that the accused products infringe dependent claim 8.

Claim 17

Independent method claim 17 recites:

> 17. In a communication system having a physical layer, data link layer, and a network layer, a method for providing cryptographic protection of a data stream, comprising:
>
> (a) assigning a packet sequence number to a packet derived from a data stream received from the network layer;
>
> (b) updating a transmit overflow sequence number as a function of the packet sequence number; and
>
> (c) encrypting, prior to communicating the packet and the packet sequence number on the physical layer, the packet as a function of the packet sequence number and the transmit overflow sequence number.

Motorola has not established that the limitations of this claim are satisfied. Claim 17 is a method claim counterpart of apparatus claim 6. CX-708C (Acampora WS) at 209. Aside from the means plus function claim element issues, the earlier discussion of apparatus claim 6 applies to this claim. Accordingly, Motorola is unable to show that the accused Microsoft devices infringe method claim 17.

3. Indirect Infringement

Motorola has not shown that Microsoft's accused products indirectly infringe all asserted claims of the '712 patent. Without evidence of direct infringement, Motorola cannot establish contributory or induced infringement. *See, e.g.*, *Joy Techs.*, 6 F.3d at 774-76.

C. Validity of the '712 Patent

For the reasons set forth below, Microsoft has not shown by clear and convincing evidence that the asserted claims of the '712 patent are invalid.

1. JPA Publication 4-326221 ("Kimura") (RX-199)

Kimura does not anticipate claim 6 or 17 of the '712 patent. CX-720C (Acampora RWS) at 40-46 and Tab F. Kimura is concerned with the encryption of a portion of the data part of a packet in a television broadcast station. Kimura refers to this portion as being the scrambled area. RX-380 at Fig. 2. There are several fields in the prefix portion of the data part which are sent unencrypted. In addition, there is an unencrypted header portion of the packet. Kimura does not disclose how this data packet was created; it merely accepts this packet as input. CX-720C (Acampora RWS) at 40.

First, Kimura does not disclose a communication system having physical, data link, and network layers. CX-720C (Acampora RWS) at 41-42; Housley Tr. 1431. Therefore, it does not satisfy the limitations of the preamble of either claim 6 or 17. In addition, both claims 6 and 17 require that the assignment of sequence numbers, updating of overflow numbers, and encipherment of data packets occur in the data link layer. CX-720C (Acampora RWS) at 42; Acampora Tr. 837; Housley Tr. 1376. Kimura does not disclose this. In fact, as Microsoft's expert agrees, there is no mention of any layers in Kimura, let alone any mention of the OSI model's layers. Housley Tr. 1429-38.

Microsoft argues that the device in Kimura can be located in any layer where packet encryption is possible (including the data link layer). *Id.* at 1431; RX-311 (Housley WS) at 10. However, Microsoft's expert agreed that Kimura does not specify at which layer assignment of sequence numbers, updating of overflow numbers, or

encipherment would occur. Housley Tr. 1429 ("We don't know what layer any of this is taking place in. Kimura doesn't say one way or the other."); 1433 (there is nothing in Kimura that ties encryption to any particular layer); 1438. Based on Microsoft's expert's admissions, Kimura does not disclose assignment, updating or encryption in Layer 2. Housley Tr. 1429, 1433. Indeed, Microsoft's expert agreed that performing encryption at Layer 2 was discouraged, based on ISO publications.[93] Housley Tr. 1436. People skilled in the art tend to follow recommendations by the ISO, and the ISO-7498 Standard is particularly relevant to the placement of security in the 7 layer model. Housley Tr. 1349-1352, 1434-1435. As such, Kimura fails to provide an explicit or inherent disclosure of layers, or operation in Layer 2, all of which are necessary for anticipation, and Microsoft has failed to meet its burden of showing the required layer structure in Kimura by clear and convincing evidence.

Because Kimura does not disclose any layers, let alone OSI layers, there is no basis for imposing an OSI organization on the various components and operations of Kimura. CX-720C (Acampora RWS) at 41. Indeed, Kimura is directed towards television broadcast technology, which is completely different from the wireless network technology in the '712 patent. Because Kimura is directed toward broadcast television, there is no need for routing information in the headers of the packets, which is a

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[93] In his written direct testimony, Microsoft's expert cites the ISO-7498-2 standard to support his allegation that encryption could occur at any of layers 1, 2, 3, 4 and 7 (physical, data link, network, transport and application layers). Housley Tr. 1351; RX-311 (Housley WS) at 9, 44-47. If this is an attempt to fill in for the fact that none of the asserted references discloses the OSI Data Link Layer requirements of the asserted claims (as discussed below), that attempt fails. The ISO-7498-2 standard states at Appendix C.1.5 that "encipherment at the data link layer is not recommended for future implementations." RX-198 at MS-MOTO_752_0005129740.

requirement of a packet created in the data link layer. *Id.* The translation of Kimura provided by Microsoft mentions two instances of alleged addresses: a service identifier and a sub-channel identifier, RX-199.021, both of which identify a television program being broadcast, not a particular device to receive the television program. Therefore these fields would not be addresses in the context of the OSI model.

Even if one were to impose an OSI organization upon Kimura, that reference still does not disclose all limitations of the '712 patent. In particular, claims 6 and 17 require that a sequence number is assigned to a packet derived from a data stream received from the Network layer. Kimura, by contrast, receives data packets that ***already*** include a sequence number. CX-720C (Acampora) 43; RX-199.0032. Kimura is silent about where and how the sequence number is generated. Housley Tr. 1429. There is no disclosure that the sequence number is generated by counting incoming packets and associating the count with the packet. CX-708C (Acampora WS) at 43. Thus, Kimura does not disclose an assigning means. CX-720C (Acampora RWS) at 44.

Further, because Kimura does not disclose an assigning means, Kimura cannot disclose an "updating means" that is operatively coupled to the assigning means or an "encrypting means" that is operatively coupled to both the assigning means and the updating means.

2. Kimura in combination with U.S. Patent No. 4,654,480 ("Weiss"") (RX-186)

Microsoft argues that dependent claim 8 would have been obvious to combine Kimura with Weiss to teach a buffer means. RRX-24C (Housley RWS) at 17-18. Microsoft is misguided. Kimura relates to television broadcasting. RRX-24C (Housley

RWS) at 19. In television broadcast there is no need for an ARQ mechanism like that disclosed in the '712 patent, because it is better to ignore lost traffic than to retransmit it. CX-720C (Acampora RWS) at 45. Therefore, there would be no need for a buffer. Further, Weiss teaches away from transmitting a sequence number, stating that "count bits developed by counter 306 are not transmitted explicitly." *Id.*; RX-186 at col. 10, lns. 24-25. Thus, a person of skill in the art would not combine Weiss with Kimura, which requires transmission of a packet number with an encrypted packet.

3. Indefiniteness

Microsoft argues that the disputed claim terms "encrypting means," "assigning means," and "updating means" are indefinite because the corresponding structures are not sufficiently described in the specification. Resp. Br. at 21-24. As discussed in the claim construction sections for those claim terms, *supra*, the undersigned found those claim terms to be not indefinite, and construed the terms.

As held in *Intel Corp.*, 319 F.3d at 1365-66:

> Whether the specification adequately sets forth structure corresponding to the claimed functions must be considered from the perspective of one skilled in the art. Any fact critical to a holding on indefiniteness, moreover, must be proven by the challenger by clear and convincing evidence.

Microsoft has not met this burden.

D. Domestic Industry (Technical Prong)

Motorola's domestic industry products are Droid 2 and Droid X smart phones (collectively, "Droid").

For the reasons set forth below, Motorola has not satisfied the technical prong of the domestic industry requirement with respect to the '712 patent.

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Claim 6

The preamble of independent apparatus claim 6 recites:

> **A transmitting communication unit for providing cryptographic protection of a data stream in a communication system having a physical layer, data link layer, and a network layer, transmitting communication unit comprising a data link layer device having:**

Motorola has satisfied the preamble.

The Droid practices the preamble. When communicating with a router set for WPA security, the Droid is a transmitting communication unit. CX-708C (Acampora WS) at 236-237. Per 802.11, the Droid and router are part of a communication system having a physical layer, a data link layer, and a network layer. *Id.* The Droid's operations, per 802.11, mirror those performed by the Xbox. To the extent the relevant Xbox operations are performed in the data link layer, the relevant Droid operations are also performed in the data link layer. An engineer from Texas Instruments, the developer/manufacturer of the Wi-Fi chipset used in the Droid products, confirms that encryption occurs in the data link layer. CX-658C (Boger Dep. Tr.) at 35-36.

The first element of claim 6 recites:

> **(a) assigning means for assigning a packet sequence number to a packet derived from a data stream received from the network layer;**

Motorola has satisfied this claim element.

The Droid practices this claim element in the same way that the Xbox infringes. Pursuant to the 802.11 standard, when using TKIP, the MPDU data packets are counted, generating a 2-byte (16-bit) sequential count, comprising "TSC0" and "TSC1." CX-

708C (Acampora WS) at 237. TI's engineer confirmed the use of a counter that increments for each packet, and further confirmed that the data to be encrypted comes from the network layer. *Id.* at 36; CX-658C (Boger Dep. Tr.) at 16-17; CX-708C (Acampora WS) at 237-240.

The structure performing this function mirrors that disclosed in the '712 patent. In both cases, a counter and related structure, implemented in circuitry and software, associates the sequence count and the packet. CX-708C (Acampora WS) at 239. Droid source code confirms this. CX-437C at 12 (describing how the TI chip includes a [ ] that generates a [ ] that [ ] for each MPDU that is processed, and illustrating the code that implements the [ ].

The second element of claim 6 recites:

> **(b) updating means, operatively coupled to the assigning means, for updating a transmit overflow sequence number as a function of the packet sequence number; and**

Motorola has not satisfied this claim element.

The claim term "transmit overflow sequence number" has been construed to mean "a multi-bit number that counts the number of times that a 'packet sequence number' rolls over, which is used in the transmitter but is not transmitted to the receive unit."

For the same reason that the Xbox does not infringe this claim element, the Droid does not practice this claim element. The Droid does not transmit the extended IV portion of the TSC, which Motorola alleges to be the "transmit overflow sequence number," under the proper construction of the claim term "transmit overflow sequence number."

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The third element of claim 6 recites:

> **(c) encrypting means, operatively coupled to the assigning means and the updating means, for encrypting, prior to communicating the packet and the packet sequence number on the physical layer, the packet as a function of the packet sequence number and the transmit overflow sequence number.**

Motorola has not satisfied this claim element.

The "encrypting means" of this element is "operatively coupled" to the "updating means," which is the second element above. Inasmuch as Motorola has not satisfied the second element ("updating means") of claim 6, it cannot show that Droid products satisfy the third element ("encrypting means") of claim 6.

Claim 8

Dependent apparatus claim 8 recites:

> **The transmitting communication unit of claim 6 wherein the data link layer device further comprises a buffer means, operatively coupled to the encrypting means, for buffering the encrypted packet and the transmitting communication unit further comprises a physical layer device, operatively coupled to the data link layer device, having transmitting means for transmitting the encrypted packet and the packet sequence number associated with the packet on the physical layer.**

Motorola has not satisfied this claim. Inasmuch as Motorola is unable to show that the Droid products practice independent claim 6, it cannot show that those products practice dependent claim 8.

Claim 17

Independent method claim 17 recites:

> **17**. In a communication system having a physical layer, data link layer, and a network layer, a method for providing cryptographic protection of a data stream, comprising:
>
> (a) assigning a packet sequence number to a packet derived from a data stream received from the network layer;
>
> (b) updating a transmit overflow sequence number as a function of the packet sequence number; and
>
> (c) encrypting, prior to communicating the packet and the packet sequence number on the physical layer, the packet as a function of the packet sequence number and the transmit overflow sequence number.

Motorola has not satisfied claim 17. Claim 17 is a method claim counterpart of apparatus claim 6. CX-708C (Acampora WS) at 256. The earlier discussion of apparatus claim 6 applies to this claim. Accordingly, Motorola is unable to show that the Droid products practice method claim 17.

X. Equitable Defenses – RAND

A. Brief Overview of the Parties' Arguments

Microsoft argues that four of the five patents Motorola asserts in this investigation (*i.e.*, the '571, '712, '596 and '094 patents) are subject to commitments Motorola made to standards setting organizations ("SSOs") to the effect that it would license those patents on reasonable and non-discriminatory ("RAND") terms. Resp. Br. at 245, 248; Resp. Reply at 80-94. It is argued that Motorola "stated unequivocally that those patents are essential to practicing the standards. As a result of its commitments to license patents on RAND terms, whether viewed under principles of contract, implied license, or waiver, [Motorola] cannot seek relief, either by injunction in the courts or an exclusion order in the Commission, that would exclude other companies from using the patents to practice

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the standards. Its remedy for use of these patents in implementation of the standards, if any, is limited to a reasonable royalty." Additionally, Microsoft argues, "even if [Motorola] were not barred as a matter of law and equity from obtaining an exclusion order on patents that it committed to license on RAND terms, its conduct leading up to the institution of this Investigation gives rise to equitable estoppel, which independently forecloses the relief [Motorola] seeks here." *Id.* at 245; Ground Rule 12 Filing at 9 (Equitable Defenses – RAND: RAND Obligation, Implied License, Waiver, Equitable Estoppel).

Motorola opposes all of Microsoft's defenses. Motorola argues that "Microsoft's RAND defenses are based on a fundamental misunderstanding of SSOs, their patent policies and RAND assurances made under those policies," and that SSO policies require only that parties engage in good-faith negotiations to determine reasonable and non-discriminatory terms for standard-essential patents." Compls. Br. at 262. It is further argued that after Microsoft sued Motorola in federal district court, [ ]. Motorola argues that [ ], Motorola sent two offer letters to Microsoft in October 2010, each offering Motorola's 'standard' terms for its 802.11 or H.264 essential-patent portfolios." *Id.* at 262-63. No license resulted from those letters. Motorola argues that "[i]n the real world, parties negotiate to a RAND license. Microsoft chose not to do so. Instead, it chose to do battle in the courtroom rather than negotiate in the boardroom. Microsoft's forfeiture of any right to a RAND license is a direct result of that decision and, for that reason alone, Microsoft's RAND defenses should be rejected." *Id.* at 263; Compls. Reply at 80-93.

A review of Microsoft's brief relating to equitable defenses shows that it consists of two parts. First, in section IX(C), Microsoft addresses three defenses that are not based on Motorola's specific conduct after it entered into RAND agreements with SSOs, but rather on three legal theories under which Motorola's entrance into those agreements is said to bar Motorola from obtaining relief at the Commission. Resp. Br. at 249-50 ("MMI's Contractual Obligations to Offer RAND Licenses Alone Bar Relief"). Those first three defenses are: (1) what the parties have referred to in their Ground Rule 12 Filing as Microsoft's RAND obligation defense, and which is actually predicated on the "subordination of equity" (*i.e.*, the Commission's remedies) to law (*i.e.*, Motorola's RAND contractual obligations); (2) implied license; and (3) "implied waiver of the right to seek equitable or exclusionary remedies." *Id.* at 250-54. Second, in section IX(D), Microsoft presents its equitable estoppel defense, which is based in large part on allegations of Motorola misconduct, as well as Microsoft reliance. *Id.* at 254-75.

As seen in the organization of the parties' briefs and arguments, each of Microsoft's equitable defenses, and Motorola's responses thereto, stems from a common set of facts, discussed immediately below.

B. Outline of the Evidence

The technologies that SSOs incorporate into standards are frequently protected, in whole or in part, by patents. Thus, SSOs often request patent holders to commit that they will agree to licenses on RAND terms.[94] CX-758C (Holleman RWS) at 8; Teece Tr.

[94] *See* RX-252 (IEEE-SA Standards Board Bylaws) at 16-19 ("IEEE standards may be drafted in terms that include the use of Essential Patent Claims. If the IEEE receives notice that a [Proposed] [sic] IEEE Standard may require the use of potential Essential Patent Claim, the IEEE shall request licensing assurance, on the IEEE Standards Board

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2703-2704; CX-757. Pursuant to such policies, Motorola (or its predecessor in interest) submitted licensing declarations and letters of assurance relating to the H.264 standard and various portions of the 802.11 standard. *See, e.g.*, RRX-15; RRX-16; CX-758C (Holleman RWS) at 12-13. Motorola may have had a choice as to types of licenses, if any, that it would provide. In any event, in the specific documents that Motorola provided to the SSOs, and that are relevant to this investigation, Motorola stated that it was prepared to grant licenses for patents essential to the relevant standards to an unrestricted number of applicants on RAND terms and conditions. Motorola does not dispute that it made such RAND commitments. *Id*; Compls. Br. at 264.

Further, in accordance with SSO policies, both the IEEE and International Telecommunication Union (or ITU) documents submitted by Motorola indicate on their face that submission of the letter or assurance does not in itself imply that a license has been granted. RRX-15 at 30; RRX-16; CX-758C (Holleman WS) at 8, 12-13. Those in the relevant industries would understand that the terms of a license would depend upon the outcome of the RAND negotiations between the applicant and the patent holder. Murphy Tr. 2040 2041; RRX-16 at 11; CX-758C (Holleman RWS) at 10-13.

In the case of Motorola, Motorola's Corporate Vice President of Intellectual Property, Kirk Dailey, testified that [

]. Dailey Tr. 2611-2612, 2625-2630; CX-778C (Dailey RWS) at 1, 3. In Motorola's experience, [

approved Letter of Assurance form, from the patent holder or patent applicant. The IEEE shall request this assurance without coercion.").

] CX-778C (Dailey RWS) at 27; Dailey Tr. 2625-2629. Ms. Jennifer Ochs, who is Marvell Semiconductor's director of IP litigation and who testified on behalf of Microsoft's supplier Marvell Semiconductor, stated that negotiations are common and expected, and can be complex and time-consuming. Ochs Tr. 1938, 1976-1979, 2008-2010.

[ ] Dailey Tr. 2494-2495. [ ] Microsoft filed a section 337 complaint against Motorola, upon which the Commission instituted Investigation No. 337-TA-744.[95] Nevertheless, Motorola met with Microsoft, as scheduled. Dailey Tr. 2924-2925, 2621-2622. The precise content of the [ ] Dailey Tr. 2498-2499, 2621-2622; Compls. Br. at 274; Resp. Br. at 255.

Subsequent to the October 2010 meeting, Mr. Dailey sent two letters, dated October 21 and 29, 2010, on behalf of Motorola to Microsoft's Deputy General Counsel, Horacio Gutiérrez, offering to license Motorola's 802.11 and H.264 patent portfolios, respectively. CX-597 (concerning the 802.11 standard); CX-598 (concerning the H.264 standard). Motorola's offer letters state that they were made to "confirm" discussions between Motorola and Microsoft. CX-597 at 1; CX-598 at 1; Dailey Tr. 2621-2622.

The letters offered Microsoft a worldwide, non-exclusive license under Motorola's portfolio of H.264 and 802.11 patents (and pending applications) at a rate of

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[95] *See Certain Mobile Devices, Associated Software, and Components Thereof*, Inv. No. 337-TA-744, Notice of Investigation (Nov. 1, 2010) ("the 744 investigation") (Motorola accused of infringing nine Microsoft patents).

2.25% applied to end-user products. The letter concerning the 802.11 patents also specified "e.g., each Xbox 360 product" and not component software; while the letter concerning the H.264 patents specified: "e.g., each Xbox 360 product, each PC/laptop, each smartphone, etc." and and not component software. CX-597; CX-598. Motorola also stated that if Microsoft was interested in only a portion of the 802.11 or H.264 portfolios, Motorola was willing to have such a discussion. CX-778C (Dailey RWS) at 2-3; CX-597 at 1; CX-598 at 1. In addition to proposing a rate of 2.25%, Motorola's offers were also made "subject to a grant back license...." CX-778C (Dailey RWS) at 2-3, 27; CX-597 at 1; CX-598 at 1.

Each letter also stated: "Motorola will leave this offer open for 20 days. Please confirm whether Microsoft accepts the offer." CX-597 at 1; CX-598 at 1. It is undisputed that Microsoft never provided a specific response to those letters.

On November 9, 2010, Microsoft filed a complaint in the Western District of Washington (No. 2:10-cv-01823) claiming that Motorola had breached its RAND assurances to both the IEEE and ITU. CX-599.

Motorola filed its complaint in this investigation on November 22, 2010. *See* Notice of Investigation. Shortly thereafter, [

] RRX-98C; Ochs Tr. 1944-45, 1991-1994. [ ] admits that in general it had [

[

] Ochs Tr. 1945, 1950-1951, 1986-1988, 1991-1998. Over seven months after [

] Ochs Tr. 1998-1999; RX-367C (Letter of Marvell to Motorola dated July 18, 2011).

Motorola sent [ ] a Non Disclosure Agreement, which [ ] signed and sent back to Motorola about seven weeks later. RX-368, Ochs Tr. 1947, 2002; RRX-89C. Thereafter, a Motorola licensing attorney, Tim Kowalski, and [ ], had numerous communications, both telephonically and by email. Mr. Kowalski explained to [ ] that Motorola had an established licensing program that focused on end users, [ ]. Mr. Kowalski explained that Motorola would have to consider how it could modify its agreement to cover [ ]. Ochs Tr. 1949, 1983-1985, 2003-2004; CX-820C (11/22/2010 email from Kowalski to Ochs: [

]

Motorola sent [ ] a draft license agreement on November 25, 2011. RRX-88C (Email from Kowalski to Ochs, dated 11/2/2011 with attachment). Ochs Tr. 2007-2008. When Ms. Ochs received the email, [

] Ochs Tr. 1952-1956, 2007-2008. She was correct. As reflected in the evidence adduced during the hearing, Motorola admits in its brief that: "The draft license agreement was consistent with Motorola's practice of licensing end-user products and consistent with the terms offered to Microsoft in the October letters. For example, the license sought a running royalty of 2.25% of the end-user products [ ]" Compls. Br. at 277-78 (citing RRX-88C , CX-778C (Dailey RWS) at 3 and Dailey Tr. 2611-2621).

C. Analysis and Conclusion As to Microsoft's RAND Obligation Defense

Microsoft indicated that it would set forth a "RAND Obligation" defense in section IX(C)(1) of its brief. Ground Rule 12 Filing at 9. As the first of "three distinct legal doctrines," Microsoft presents in section IX(C)(1) of its brief a two-paragraph argument based on Motorola's RAND commitments. Resp. Br. at 250-51. Microsoft's argument is as follows:

> Equitable remedies generally supplement rather than destroy legal rights. Pursuant to the maxim that "equity follows the law," "wherever the rights or the situation of parties are clearly defined and established by law, equity has no power to change or unsettle those rights or that situation." *Hedges v. Dixon County*, 150 U.S. 182, 192 (1893); *Fortis Benefits v. Cantu*, 234 S.W.3d 642, 648-49 (Tex. 2007) ("Where a valid contract prescribes particular remedies or imposes particular obligations, equity generally must yield unless the contract violates positive law or offends public policy."); Pomeroy, *Equity Jurisprudence* § 425 (4th ed. 1918) ("Equity follows the law, in the sense of obeying it, conforming to its general rules and policy"). In this case, MMI has assumed by contract the legal obligation to grant RAND licenses to all comers. Potential licensees can sue MMI to enforce that obligation, and they have done so. *E.g.*, RRX-126; *Apple [Inc. v. Motorola Mobility, Inc.*, No. 11-cv-178,] 2011 U.S. Dist. LEXIS [] 72745. An exclusion order would conflict with a

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> judgment that MMI must license as a matter of contract law, and it therefore would be an inappropriate exercise of the Commission's equity powers. As the Commission has explained, "even though a royalty obligation might accrue, an injunction may not issue against the beneficiary of a promise, which, if enforced, would be inconsistent with suit for an injunction." [*Certain Dynamic Random Access Memories, Components Thereof, and Products Containing Same] DRAM*, [Inv. No. 337-TA-242,] 987 ITC LEXIS 95, at *31 [(May 21, 1987)] (citing *Medtronic, Inc. v. Catalyst Research Corp.*, 518 F. Supp. 946 (D. Minn. 1981), *aff'd*, 664 F.2d 660 (8th Cir. 1982)). Here, Microsoft is the beneficiary of MMI's promise to license, which if enforced would be antithetical to an exclusion order.
>
> The subordination of equity to law forecloses the remedies available in this forum, but it does not bar MMI from seeking a reasonable royalty in court. Indeed, MMI itself elected the right to seek damages, and *only* damages, by assuming the contractual obligation to license.

Id. (emphasis in original).

There is no dispute that "equity follows the law," as observed by the Supreme Court in its *Hedges* opinion. It is, however, noteworthy that with all of the patents subject to RAND licensing obligations that may have ever come before the Commission, Microsoft was not able to cite one case in which a section 337 remedy was foreclosed due to the existence of RAND obligations. Microsoft has not relied on any court case in which an injunction was denied or set aside due simply to the existence of RAND obligations. Microsoft has not pointed to any statute that conflicts with the powers granted to the Commission by section 337. In this case, it has not been shown that the "rights or the situation of parties are clearly defined and established by law" so as to prohibit Motorola from obtaining relief from the Commission.

The *DRAMs* opinion relied on by Microsoft, which issued in the course of a section 337 investigation, was an opinion of an administrative law judge who was addressing circumstances in which "mutual obligations are incurred and relied upon with

respect to patent rights," in which case "a finding of infringement is inappropriate, even though royalties might be owed." 1987 LEXIS 95, at *31. Specifically at issue were infringement allegations that were made by a complainant despite the fact that there was an ongoing dispute about the renewal of a cross-license. 1987 LEXIS 95, at *26. That situation is not analogous to the case involving Motorola and its obligations, assumed by means of unilateral assurances to SSOs, to provide RAND licenses for essential technologies. In contrast to the "mutual obligations" discussed in *DRAMs*, Microsoft claims that it is already a "beneficiary of MMI's promise to license," but is silent as to any obligations that it may have to undertake before its products are actually licensed.

Motorola raises prior Microsoft statements that conflict with the arguments that Microsoft makes in this investigation, including one that, in particular, addresses the availability of section 337 to a patent holder with RAND obligations. Compls. Br. at 272, 274, 290. In fact, as discussed in this section of the Initial Determination, prior conflicting statements concerning the relationship of RAND licensing obligations to section 337 remedies have been made by both Microsoft and Motorola.

Microsoft admits that in a letter, dated June 14, 2011, to the Federal Trade Commission, it said that "the existence of a RAND commitment to offer patent licenses should not preclude a patent holder from seeking preliminary injunctive relief or commencing an action in the International Trade Commission just because the patent holder has made a licensing commitment to offer RAND-based licenses in connection with a standard." CX-805 at MOTMITC_0697597. In that letter, Microsoft was addressing "patent 'hold-up' in connection with standardization effort." *Id.* at MOTMITC 0697585. In this investigation, Microsoft has addressed a similar issue,

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explaining in its brief that "[a]ll of the witnesses at the hearing questioned on this basic economic principle agreed that the adoption of a standard may give owners of essential patents the ability to use the standard to 'hold up' those who wish to practice it. *See* RX-315C (Murphy) at Q17; Holleman Tr. 1319-20; Teece Tr. 2663-64." Resp. Br. 246-47. Microsoft now seeks to distance itself from the statement it made to the FTC, arguing that its letter "was directed to different concerns than those at issue in this Investigation, and *to the extent the letter conflicts with Microsoft's position here, the letter is incorrect*. When squarely faced with the issue in the 744 Investigation, Microsoft conceded MMI's position that RAND commitments are inconsistent with an exclusion order." Resp. Br. at 254 n.29 (emphasis added).

Ultimately, no prior statement by any party will determine whether as a matter of law the Commission's ability to issue a remedy in an appropriate case must yield to RAND licensing obligations. For the reasons stated above concerning *Hedges* and the interplay of law and equity, it has not been shown that the Commission is unable to issue a remedy in this investigation due to the existence of Motorola's RAND commitments.

Accordingly, it is found that Microsoft has not prevailed in its RAND obligations defense.

D. Analysis and Conclusion As to Microsoft's Implied License Defense

In section IX(C)(2) of its brief, Microsoft argues that "[t]he same result—a bar on exclusionary but not legal remedies—obtains under the doctrine of implied license. MMI has consented to the use of its patented inventions, promising to '*grant* a license,' and the only material question is the price for such use." Resp. Br. at 251 (apparently quoting the letter and assurance sent to the SSOs); Ground Rule 12 Filing at 9. It is argued that

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"MMI's affirmative actions in connection with the ITU and IEEE clearly and conclusively demonstrate MMI's consent to the use of the technologies in the standards-essential patents by third parties who make products that implement the standards, subject to the 'subsequent settlement [of] what reasonable compensation, if any, it might claim for its license.'" *Id.* 251-52 (quoting *DeForest Radio Tel. & Tel. Co. v. United States*, 273 U.S. 236, 242 (1927)). Microsoft admits that the documents sent to the SSOs contain the statement "No license is implied" or similar terminology, but argues that "such language does not determine whether the 'entire course of conduct' reasonably led Microsoft 'to infer consent to manufacture and sell' products that practice the patents." *Id.* at 252 (quoting *Wang Laboratories, Inc. v. Mitsubishi Electronics America*, 103 F.3d 1571, 1581-82 (Fed. Cir. 1997)).

Microsoft has cited to no instance in which an executed document such as a letter of assurance sent to an SSO resulted in an implied license. Further, in this case, it is unclear upon precisely what "entire course of conduct" Microsoft would build its defense of implied license, and thus render ineffective Motorola's express statement of no implied license. As discussed above, the documents sent to the SSOs by Motorola explicitly state that no license should be implied. Moreover, the evidence of record indicates that Motorola has licensed its patents, including those deemed to be essential to SSO standards, only after negotiations, which were often lengthy negotiations. In the implied license portion of its brief, Microsoft points to no evidence to the contrary.

Accordingly, it is found that Microsoft has not carried its burden with respect to its defense of implied license.

E. Analysis and Conclusion As to Microsoft's Waiver Defense

Microsoft indicated that it would present a waiver defense in section IX(C)(3) of its brief. Ground Rule 12 Filing at 9. Indeed, Microsoft argues that in addition to implied license, Motorola's conduct also supports a finding of implied waiver of the right to seek equitable or exclusionary remedies. It is argued that Motorola "told the public that it would license its patents for a reasonable royalty, impliedly renouncing any right to enforce the patents through injunctive or exclusionary relief." Resp. Br. at 263 (citing *Qualcomm v. Broadcom Corp.*, 548 F.3d 1004, 1021 (Fed. Cir. 2008)).

With respect to the *Qualcomm* case, Microsoft argues that "the patent holder had failed to disclose essential patents relating to the H.264 standard despite an obligation to do so, and the Federal Circuit held that the patent holder had thus impliedly waived its right to enforce its patents." It is argued that the principle at work in *Qualcomm* "applies with even greater force here, for *Qualcomm* involved a mere failure to disclose, whereas MMI's affirmative assurances directly support a waiver. MMI promised the SSOs and their members that it would demand only a reasonable royalty, knowing full well that doing so meant forgoing equitable relief."[96] *Id.*

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[96] Microsoft argues that Motorola took the same position in the 744 investigation when it stated in certain discovery responses that [ ] *Id.* at 252-53 (quoting RRX-124C (Motorola Mobility, Inc.'s Amended Supplemental Objections and Responses to Complainant Microsoft Corporation's Interrogatory Nos. 30-32, 35-38 & 130-131 and Second Amended Supplemental Objections and Responses to Complainant Microsoft Corporation's Interrogatory Nos. 27 & 28, dated May 27, 2011, in the 744 Investigation.)). Without assuming to know all the relevant facts and context of the 744 investigation, it seems that Motorola's assertion was an overstatement of the law because it failed to account for the fact that a RAND license is not automatic, but RAND terms must ultimately be accepted by the parties, including the potential licensee. As indicated in the discussion above concerning Microsoft's letter to the FTC, Microsoft also seemed aware, by its prior statements, that by assuming RAND obligations, one is not automatically foreclosing the possibility of a section 337 remedy.

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As indicated by Microsoft, the *Qualcomm* case centered on a plaintiff that had not disclosed essential patents to the SSO. There is no such allegation in this case. Rather, as discussed above, Motorola disclosed all of the patents at issue, and it has not been shown that in doing so, Motorola granted an implied license to any of them. As recognized by Microsoft, implied license and waiver, in the manner raised by Microsoft in this investigation, are two sides of the same coin.[97] It has not been shown how Motorola's conduct, especially the fact that it "told the public that it would license its patents for a reasonable royalty," supports a waiver defense.

Accordingly, Microsoft has not prevailed in its waiver defense.

F. Analysis and Conclusion As to Microsoft's Equitable Estoppel Defense

1. Summary of the Parties' Arguments in Equitable Estoppel

Microsoft indicated that it would present an equitable estoppel defense in section IX(D) of its brief. Ground Rule 12 Filing at 9. Indeed, Microsoft argues that "[e]ven if MMI had not relinquished any right to an exclusion order by virtue of having committed to license its standard-essential patents on RAND terms, MMI should be barred from such relief in this case under the doctrine of equitable estoppel. This is because its license 'offers' to Microsoft were shams specifically designed to set up this and other litigation and breached MMI's RAND assurances on which Microsoft had reasonably relied." Resp. Br. at 254.

[97] Microsoft argues, "Implied license and implied waiver of equitable remedies are interchangeable in this forum because money damages are unavailable. But there is a difference between the two, for to the extent MMI impliedly licensed Microsoft's use of the patents, MMI cannot obtain infringement damages—it can only sue for royalties under the license. An implied waiver of equitable remedies still permits infringement liability, although only for money damages." Resp. Br. at 253 n.26.

With respect to its allegation that Motorola disregarded its RAND obligations "to set up this litigation and other litigation with Microsoft," Microsoft details its argument that after Microsoft brought a complaint at the Commission against Motorola, Motorola set its alleged scheme into motion. *Id.* at 254-58. For example, it is argued that "MMI devised a strategy of circumventing its RAND obligations so it could assert its standard-essential patents against Microsoft and gain leverage from the threat of exclusionary relief. [

] *Id.* at 254-55 (citing Dailey Tr. 2621-2622).

It is further argued that [

] "MMI sent two sham license offers in admitted retaliation for Microsoft's Android complaint," knowing that Microsoft could not accept the terms stated therein. *Id.* at 255. The alleged sham letters were briefly discussed above in this section of the Initial Determination, and both proposed a royalty rate of 2.25% on end products.

Microsoft argues that Motorola's "demands" were unreasonable because they were based on the value of the end product, even though Motorola's patents provide little, if any, value to the products. *Id.* at 259-61. Indeed, it is argued, "MMI's standards-essential patents relate not to Xbox's primary uses but to peripheral features whose primary function is to ensure compliance with the standards. MMI's 802.11 patents relate only to security for the 802.11 standard, but Xbox utilizes its own encryption and therefore has no use for MMI's patents apart from their inclusion in the standard." *Id.* at 259 (citing RX-317C (Caruana WS) at Q48-49, Holleman Tr. 1312; Dailey Tr. 2516). Similarly, it is argued, "MMI's H.264 patents relate only to interlaced video, which is not even utilized when Xbox is used for playing games or videos." *Id.* (citing RX-361C

(Rossini WS) at Q20; Holleman Tr. 1312-1313; Murphy Tr. 2061-2062; Teece Tr. 2658-2661).

Further, Microsoft argues that it asked [ ] to obtain a license from Motorola so that there would be a "genuine license" under the 802.11 essential patents. *Id.* at 261-62. Yet, it is argued, Motorola's response was once again a sham designed to be unacceptable inasmuch as it would require [ ] to pay past and future royalties of 2.25% on the end price of [ ] customers' products, regardless of how inconsequential the [ ] might be in the final product. *Id.* at 262-63. In fact, it is argued, the royalties sought by Motorola exceed any relevant benchmark, such that the royalty Motorola sought for WiFi patents exceeded the price of the [ ] that provides all 802.11 functionality for Xbox. *Id.* at 263-65. Further, it is argued, if Motorola had followed its own stated policies of licensing end users, it would not have sought from Microsoft "a royalty from Microsoft for all Windows-based computers and smartphones, even though Microsoft sells Windows software, which is only a component of computers and smartphones sold by its customers." *Id.* at 265.

Microsoft argues that Motorola's attempts to justify its unreasonable and discriminatory licensing attempts are unavailing, and instead demonstrate that Motorola was never interested in good-faith negotiations with Microsoft or in offering Microsoft a license on RAND terms. Thus, it is argued, Motorola's infringement claims are barred under equitable estoppel. *Id.* at 266-74.

As indicated above, Motorola opposes Microsoft's defense. Motorola argues that it has not engaged in misleading conduct, and that its October 2010 letters to Microsoft complied with RAND standards in that they showed that Motorola was willing to enter

into negotiations for RAND licenses. Compls. Br. at 282-88. Further, it is argued, there is no evidence that Microsoft relied on any allegedly misleading conduct, or that Microsoft would be materially prejudiced by an exclusion order if found to violate section 337. Rather, it is argued, Microsoft should not be allowed to infringe another party's patents with impunity. *Id.* at 288-89.

2. Application of Legal Standards; Conclusion on Equitable Estoppel

The Federal Circuit's opinion in *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020 (Fed. Cir. 1992) sets forth the standard to be applied with respect to a defense of equitable estoppel in a patent case. It is relied upon by both Microsoft and Motorola. Resp. Br. at 272; Compls. Br. at 281-82, 289. In *Aukerman*, the Federal Circuit held, *inter alia*, that "[e]quitable estoppel is cognizable under 35 U.S.C. § 282 as an equitable defense to a claim for patent infringement;" that "[w]here an alleged infringer establishes the defense of equitable estoppel, the patentee's claim may be entirely barred;" that three elements must be established to bar a patentee's suit by reason of equitable estoppel; and that "[n]o presumption is applicable to the defense of equitable estoppel."[98] 960 F.2d at 1028. The three elements that must be established in an equitable estoppel case are the following: (1) "the statements or conduct of the patentee . . . must communicate something in a misleading way;" (2) "[t] accused infringer must show that, in fact, it substantially relied on the misleading conduct of the patentee in connection with taking some action;" and (3) "the accused infringer must establish that it

[98] The Federal Circuit, contrasting equitable estoppel with laches (also at issue in the *Aukerman* appeal) held, "Because the whole suit may be barred, we conclude that the defendant should carry a burden to establish the defense based on proof, not a presumption." *Aukerman*, 960 F.2d at 1043.

would be materially prejudiced if the patentee is now permitted to proceed."[99] *Id.* at 1042-43. "Finally, the trial court must, even where the three elements of equitable estoppel are established, take into consideration any other evidence and facts respecting the equities of the parties in exercising its discretion and deciding whether to allow the defense of equitable estoppel to bar the suit.[100] *Id.* at 1043.

The First Element: Misleading Communication

As to the first element that must be established in an equitable estoppel case (*i.e*, "the statements or conduct of the patentee . . . must communicate something in a misleading way"), the Federal Circuit explained in *Aukerman* that "[t]he 'something' with which this case, as well as the vast majority of equitable estoppel cases in the patent field is concerned, is that the accused infringer will not be disturbed by the plaintiff patentee in the activities in which the former is currently engaged." 960 F.2d at 1042 (footnote omitted).

There is no evidence of anything that could be construed as direct communication between Motorola and Microsoft concerning Motorola's willingness to license the patents at issue, or willingness not to disturb Microsoft's conduct with respect to the accused devices, until shortly before Motorola sent the two October 2010 offer letters at issue. The record, which is discussed above, shows that the parties [

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[99] "As with laches, the prejudice may be a change of economic position or loss of evidence." *Aukerman*, 960 F.2d at 1043.

[100] The Federal Circuit also held that "since no special considerations are implicated by the defense of equitable estoppel as we have defined it herein, we adopt the preponderance of evidence standard in connection with the proof of equitable estoppel factors, absent special circumstances, such as fraud or intentional misconduct." *Aukerman*, 960 F.2d at 1046.

] the ensuing October 2010 letters from Motorola to Microsoft, with their licensing offers, are in evidence. Moreover, the documents that Motorola had already sent to the SSOs concerning RAND licensing, and the obligations it thereby undertook, were designed to provide assurances to the SSOs and their members that Motorola would provide RAND licenses to patents essential to the specified standards. Thus, Motorola has "communicated something," as required by the first element of equitable estoppel, when Motorola sent its letters and assurance to the SSOs. Yet, to address fully the requirement of the first element of equitable estoppel, it must be determined whether or not those communications were in fact misleading. As discussed immediately below, Motorola's statements and conduct toward Microsoft, and also toward [ ], show that Motorola's statements to the SSOs were misleading.

The evidence shows that the royalty rate offered by Motorola of 2.25%, both as to its amount and the products covered, could not possibly have been accepted by Microsoft. The evidence shows that Motorola has entered into licenses with at least [ ] companies for Motorola essential patents at a rate that is at or near 2.25%. In each license, [ ] was included in that grant. CX-778C (Dailey RWS) at 3-23; CX-62C to 66C; CX-70C; CX-73C; CX-74C; 75C; CX-77C; CX-83C; CX-91C; CX-92C; CX-93C; CX-94C, CX-96C to 101C, CX-104C, CX-105C, CX-582C, CX-681C, CX-782C. For [ ] of the negotiations preceding the licenses, Motorola identified correspondence that showed an opening offer at or around 2.25%. CX-778C (Dailey RWS) at 3-4. Yet, there are likely differences between the products covered by

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those licenses and the products at issue in this investigation because, as Motorola admits, some of the licenses were for Motorola's cellular essential portfolios, and thus "not necessarily the 802.11 or H.264 portfolios." Compls. Br. at 272-73. Indeed, Motorola [ ] Dailey Tr. 2639-2640.

Use of the functionality related to the H.264 standard, which is covered by a plain reading of the Motorola offer, is likely to be encountered only by a user of interlaced video, and its use is thus far from universal in the accused Xbox devices. None of the normal uses of the Xbox console – playing games or DVDs or viewing most Internet content – use this functionality. RX-361C (Rossini WS) at Q20; Holleman Tr. 1312-13, Murphy Tr. 2061-62, Teece Tr. 2658-2661. In addition, on the face of the Motorola offer, the 2.25% royalty covers the end price of all products containing Windows or Windows Phone software. Even if the royalty were based only on the value of Windows software, rather than the entire value of computers and smartphones that incorporate Windows, it would amount to $400 million per year, or [ ] *See* Dailey Tr. 2547-2549; CX-15. Motorola's own corporate vice president of intellectual property was [ ] Dailey Tr. 2529, 2531. Indeed, there is no evidence that any company would agree to the offer that Motorola sent to Microsoft.

Motorla's offer to [ ] covered past and future royalties of 2.25% on the end price of [ ] customers' products, regardless of how [

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]. The royalty on even the least expensive of end products incorporating [ ] would likely exceed the price of [ ], which [ ]. *See* RRX-97C (Murphy) at Q6; Ochs Tr. 1941, 1958-1960. For example, the royalty applied to a gaming console that wholesales for $200 would be $4.50, or more than the price of [ ]. Ochs Tr. 1942-1943, 1961-1962; Dailey Tr. 2524-2525, 2525. In addition to such a high rate, Motorola's offer specifically excluded any [

]. RRX-88C at § 3.5 and Annex C; Ochs Tr. 1943-1943, 1958-1960.

The offers made to Microsoft show that although Motorola assured the SSOs and the public that it would provide reasonable and non-discriminatory licenses for the patents essential to certain standards, those communications were misleading. This fact is only made more apparent by Motorola's dealings with [ ]. While Motorola's offers need not be the same as the terms that might eventually be contained in a RAND license, Motorola admits that it is bound to negotiate in good faith. Compls. Br. at 263-63, 279-82 (citing, *inter alia*, CX-758C (Holleman WS) at 8-13; CX-759C (Teece WS) at 6, 11, 16; Holleman Tr. 1323-1325, 1328-1329). Motorola's answer to the evidence concerning the terms that it actually offered is that through negotiations Microsoft could have explained the nature of its business, and eventually (perhaps over the course of lengthy negotiations lasting months or years, based on past negotiations) Motorola would have provided a reasonable and non-discriminatory license. *See* Dailey Tr. 2496-2497, 2634-2635; Compls. Br. at 284-89. Yet, in view of the terms offered, there is nothing in

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the record to suggest that even that scenario is likely. As discussed above, the evidence supports Microsoft's conclusion that Motorola was not interested in good faith negotiations and in extending a RAND license to it.[101]

Microsoft argues that the letters it received from Motorola made "take it or leave it" offers, based largely on the closing of each letter, which stated that the offer was open for only 20 days, and would Microsoft please confirm. *See* Resp. Br. 270, CX-597C; CX-598C. That provision of Motorola's letters is described in more detail above, and does not weigh heavily in the determination that Motorola made misleading communications, as required under *Aukerman*. Especially if Motorola were otherwise engaged in an attempt at good-faith negotiations toward a RAND license, that statement by Motorola would not necessarily indicate a "take it or leave it" demand, but only that if one delayed in negotiations, after 20 days one would have to begin on a different, and possibly less advantageous, footing. In the actual circumstances presented, Microsoft had no interest in using Motorola's offer as a starting point for negotiations.

Consequently, the first element to be considered with respect to an equitable estoppel defense has been established.

The Second Element: Reliance

As to the second element that must be established in an equitable estoppel case (*i.e*, "[t]he accused infringer must show that, in fact, it substantially relied on the misleading conduct of the patentee in connection with taking some action"), the Federal

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[101] Indeed, Motorola claims that before writing to Microsoft, Motorola [

] *See* Dailey Tr. 2519, 2543-2545.

Circuit explained in *Aukerman* that "[r]eliance is not the same as prejudice or harm, although frequently confused. An infringer can build a plant being entirely unaware of the patent. As a result of infringement, the infringer may be unable to use the facility. Although harmed, the infringer could not show reliance on the patentee's conduct. To show reliance, the infringer must have had a relationship or communication with the plaintiff which lulls the infringer into a sense of security in going ahead with building the plant." 960 F.2d at 1043.

Microsoft argues that it "reasonably relied on the promise of a RAND license when it made investments implementing the H.264 and 802.11 standards in its products, including its Xbox gaming consoles. Microsoft had no reason to doubt that MMI would honor its Letters of Assurance, for MMI itself participated in and benefited from the standard-setting process—a process which depends on reliable and enforceable RAND assurances." Resp. Br. at 273 (citing a text from the year 2000, but no evidence of record). In its reply, Microsoft argues that "MMI asserts that there is no evidence Microsoft relied on its RAND promises, but the evidence demonstrates Microsoft made investments implementing the 802.11 and H.264 standards, which are now sunk costs." Resp Reply at 92-93. Microsoft, however, never explains what those costs were or, more importantly, that it undertook them in consideration of Motorola's communications with the SSOs in which it assumed RAND obligations. Motorola's communications to the SSOs may have been misleading, as betrayed by Motorola's subsequent conduct toward Microsoft [ ] which is discussed above, but there is no evidence that Microsoft relied on any statement by Motorola to embark on, or to continue in, any course of conduct.

Consequently, the second element to be considered with respect to an equitable estoppel defense has not been established.

The Third Element: Material Prejudice

As to the third element that must be established in an equitable estoppel case (*i.e*, "the accused infringer must establish that it would be materially prejudiced if the patentee is now permitted to proceed"), the Federal Circuit explained in *Aukerman* that "the prejudice may be a change of economic position or loss of evidence." 960 F.2d at 1043.

There is no dispute that if Motorola obtains an exclusion order, Microsoft would be prohibited from importing its profitable Xbox console, and possibly controllers or other products used with the consoles. As is evident from the discussion above in connection with the revenues to be gained merely from royalties on the accused products, the loss of revenues to Microsoft resulting from an exclusion order would be large, at least until such time as the products could be redesigned (and there is no estimate in the record of how long that would take).

Motorola argues that "one who chooses to infringe should not be heard to complain that he has to pay the penalty for his infringement." Compls. Br. at 289 (citing *Robert Bosch LLC v. Pylon Mfg. Corp.*, 659 F.3d 1142, 1156 (Fed. Cir. 2011)). Motorola, however, misses the point. If equitable estoppel were to be found, then Microsoft's infringement would have occurred in reliance on Motorola's misleading statements.[102] In that case, Microsoft would have good reason to complain of the economic or other injury it would suffer.

[102] When a patent holder made misleading statements to the infringer who relied on those statements, the application of equitable estoppel would not run contrary to the *Bosch*

Consequently, the third element to be considered with respect to an equitable estoppel defense has been established.

Conclusion on Equitable Estoppel

The test set forth in *Aukerman* would require a trial court, even where the three elements of equitable estoppel are established, to consider any other evidence and facts respecting the equities of the parties in exercising its discretion and deciding whether to allow the defense of equitable estoppel to bar the suit. 960 F.3d at 1043. As discussed above, all three elements have not been established because it has not been shown that there was the requisite reliance. All "three elements must be established to bar a patentee's suit by reason of equitable estoppel." 960 F.2d at 1028.

Accordingly, it is not found that equitable estoppel bars Motorola's request for a remedy.

XI. Economic Prong; Determinations on Domestic Industry

As indicated above in section IV.D., in order for a section 337 violation to be found as to any of the five asserted patents, Motorola must establish that the domestic industry requirement has been satisfied as to that individual patent.[103] Thus, for each

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opinion, cited by Motorola. In *Bosch,* the Federal Circuit was concerned with the equitable factors relative to the granting of a permanent injunction. The court held, "A party cannot escape an injunction simply because it is smaller than the patentee or because its primary product is an infringing one." 659 F.3d at 1156. Nevertheless, it was determined in *Bosch* that the hardships balanced in favor of granting the injunction. Moreover, the Federal Circuit's *Aukerman* opinion is specifically concerned with an infringer that seeks the application of estoppel against the patent holder.

[103] The statute allows the domestic industry requirement to be satisfied in some instances when a domestic industry is in the process if being established. Further, the statute does not restrict the definition of a domestic industry to only the domestic investments or other activities of the complainant. *See* 19 U.S.C. § 1337(a)(2)-(3). Nevertheless, Motorola is

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patent, Motorola must show that is satisfies section 337(a)(3)(A), (B) or (C) (*i.e.*, that with respect to each individual patent, it has significant investment in plant and equipment; significant employment of labor or capital; or substantial investment in exploitation of the patent, such as through engineering, research and development ("R&D"), or licensing).

Motorola argues that as to each patent, it has satisfied the domestic industry requirement under section 337(a)(3)(A), (B) and (C). Compls. Br. at 262. First, in reverse order to the way that the definition of a domestic industry is presented in the statute, Motorola argues that under section 337(a)(3)(C), its investments in licensing, as well as engineering and R&D, satisfies the definition of a domestic industry, and thus the domestic industry requirement, with respect to each patent. *See Id.* at 244-61. Second, Motorola argues that under section 337(a)(3)(A) and (B), it has satisfied both the technical and economic prongs with respect to each patent. Motorola's arguments with respect to its investments and activities relative to section 337(a)(3)(A) and (B) refer back to its previous arguments concerning section 337(a)(3)(C). *See Id.* at 244, 261-62.

Motorola's domestic industry case is discussed below generally in the order argued by Motorola (section 337(a)(3)(C), followed by section 337(a)(3)(A) and (B)). Finally, the conclusion on domestic industry is provided for each patent. As to each patent, a statement is made as to whether or not the domestic industry requirement is satisfied through licensing, engineering or R&D (*i.e.*, investment in exploitation as defined by section 337(a)(3)(C)), and then a statement is made as to whether or not a

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relying on domestic industries alleged to be already in existence as to each asserted patent; and further, Motorola relies only on it own investments or other activities. *See* Compls. Br. at 244.

domestic industry exists as defined in section 337(a)(3)(A) or (B). With respect to the latter, the technical prong conclusion as to each patent (set forth in earlier sections of this Initial Determination) is combined with the economic prong analysis contained below.

A. Section 337(a)(3)(C)

1. Licensing

a. The Legal Standard Applied to Licensing

Section IV.D. of this Initial Determination contains an overview of the domestic industry requirement, and shows that, in certain circumstances, a complaint can show that the requirement is satisfied by relying on section 337(a)(3)(C), and particularly, upon substantial investments made to license an asserted patent. In its opinion in *Navigation Devices*, initially cited in section I.D., the Commission summarized and highlighted statutory provisions and case precedent to shed light on the steps that a complainant must could take, and in some cases might take, in order to arrive at a successful showing of domestic industry based on licensing.

Each complainant seeking to satisfy the domestic industry requirement by its investment in patent licensing must establish that its asserted investment activities satisfy three requirements of section 337(a)(3)(C). First, the investment must relate to exploitation of the asserted patent. Second, the investment relate to "licensing." Third, any alleged investment must be domestic, *i.e.*, it must occur in the United States. After determining the extent to which a complainant's investments fall within these statutory parameters, *i.e.*, the required nexus to the asserted patent, nexus to licensing and nexus to the United States, one can evaluate whether a complainant's qualifying investments are "substantial," as required by the statute. *Navigation Devices*, Comm'n Op. at 4.

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"Because the statute requires that investments satisfy all three of these requirements, the absence of a nexus to any one of them will defeat complainant's attempt to satisfy the domestic industry requirement." *Id.* at 7 n.12.

Nexus to the Asserted Patent

If a complainant's activity is only partially related to licensing the asserted patent in the United States, the Commission examines the strength of the nexus between the activity and licensing the asserted patent in the United States. *Id.* at 4. A complainant may be able to establish the strength of the nexus between the asserted patent and its licensing activities through evidence showing that its licensing activities are particularly focused on the asserted patent among the group of patents in the portfolio, or through other evidence that demonstrates the relative importance or value of the asserted patent within the portfolio. *Id.* at 5 (citing *Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, Inv. No. 337-TA-650, Comm'n Op. at 44-51 (Apr. 14, 2010) (evidence clearly showed that one patent was more important and more valuable than the other)).

When a large patent portfolio is at issue, a potentially important consideration is whether the licensee's efforts relate to "an article protected by" the asserted patent under section 337(a)(2)-(3). For example, if a licensee's product is an "article protected by" the patent, then the license at issue is connected to that patent.[104] *Id.* at 5. In general, the

[104] "Evidence that the patent-at-issue is practiced or infringed in the United States may also be relevant to the value of the patent and may suggest a high value relative to that of the other patents in the portfolio. Conversely, evidence that a patent is not practiced or infringed may indicate relatively less value." *Navigation Devices*, Comm'n Op. at 6.

Commission may also consider other factors, including, but not limited to: (1) the number of patents in the portfolio;

(2) the relative value contributed by the asserted patent to the portfolio; (3) the prominence of the asserted patent in licensing discussions, negotiations and any resulting license agreement; and (4) the scope of technology covered by the portfolio compared to the scope of the asserted patent. *Id.*

"Evidence demonstrating the relative value and/or importance of an asserted patent in a portfolio may indicate the focus of complainant's investment and, in turn, may reflect the strength of the nexus between these activities and the asserted patent." *Id.* The Commission has stated, by way of example, that "the asserted patent may be shown to be particularly important or valuable within the portfolio where there is evidence that (1) it was discussed during the licensing negotiation process, (2) it has been successfully litigated before by complainant, (3) it relates to a technology industry standard, (4) it is a base patent or a pioneering patent, (5) it is infringed or practiced in the United States, or (6) the market recognizes its value in some other way." *Id.* Yet, the Commission recognizes that "certain facts pertaining to the importance or value of a particular patent in a portfolio may, in some instances, be difficult to establish as a result of the varying perspectives of the complainant, potential licensees, and third parties." *Id.* Indeed, "a patent may be important to the patentee or the potential licensee for different reasons. Frequently, there is no evidence as to what motivated the licensee to agree to take a license. Nevertheless, this type of evidence, when present in the record, is useful in determining the focus of complainant's licensing activity. A showing that the asserted patent is relatively important within the portfolio is not required to show a nexus between

that patent and the licensing activities . . . but may be one indication of the strength of the nexus." *Id.*

"All things being equal, the nexus between licensing activities and an asserted patent may be stronger when the asserted patent is among a relatively small group of licensed patents. The scope of the technology covered by the license and the congruence of the patents contained in the portfolio may also indicate the strength of the nexus to a particular patent." *Id.* (citing *Certain Dynamic Sequential Gradient Compression Devices and Component Parts Thereof*, Inv. No. 337-TA-335, Final ID, USITC Pub. 2575 at 63 (Nov. 1992) ("To include activities which are in the same field of technology but which do not have the requisite nexus to the patent would be contrary to the statute.") (footnote omitted)). Consequently, "[e]vidence showing how the asserted patents fit together congruently with other patents in the portfolio covering a specific technology may demonstrate a stronger nexus to the licensing activity than evidence indicating that the patents cover a wide variety of technologies bearing only a limited relationship to one another."[105] *Id.*

Nexus to Licensing

A complainant's activities relied upon to show investment in licensing may be solely related to licensing. Yet, when activities serve multiple purposes, a complainant cannot rely on all related expenditures to prove domestic industry. *Id.* "For example, the evidence may show that analyzing another company's product for infringement may

[105] "The burden is on complainant to show that there is a nexus between its alleged licensing activities and an asserted patent. A complainant cannot establish that the asserted patent is more valuable than the remainder of the patents in a portfolio merely by filing a section 337 action alleging infringement of that patent." *Navigation Devices*, Comm'n Op. at 6.

relate to licensing, but it may also occur with an eye toward litigation seeking injunctive relief against that company." *Id.* Indeed, the Court of Appeals for the Federal Circuit has held that "expenditures on patent litigation do not automatically constitute evidence of the existence of an industry in the United States established by substantial investment in the exploitation of a patent." *Mezzalingua v. Int'l Trade Comm'n*, 660 F.3d 1322, 1328 (Fed. Cir. 2011). "The fact that litigation adversaries eventually enter into a license agreement does not . . . mean that all of the prior litigation expenses must be attributed to the licensing effort." *Id.* at 1329. Rather, a nexus must be shown between litigation expenses and licensing. *Id.* at 1328.

Nexus to the United States

"The most obvious requirement of section 337(a)(3) is that the investment occur in the United States." *Id.* (citing 19 U.S.C. § 1337(a)(3)). When a complainant's licensing activity is performed and directed within the United States, the facts weighs in favor of a strong nexus between the activities and the United States. *Id.* "The Commission's analysis is a fact-focused and case-specific inquiry that takes into account the extent to which the complainant conducts its licensing operations in the United States, including the employment of U.S. personnel and utilization of U.S. resources in its licensing activities." *Id.* (footnote omitted).

Whether the Investment Is "Substantial"

Once it has been shown that a complainant's investment is in licensing the asserted patent in the United States, the next inquiry is whether the investment is substantial, as that term is used in the statute. *See Id.* As indicated in section I.D. of this Initial Determination, in the general discussion of section 337(a)(3)(c), this inquiry is a

fact-dependent inquiry for which the complainant bears the burden of proof. *Stringed Musical Instruments*, Comm'n Op. at 8.

There is no minimum monetary expenditure that a complainant must demonstrate to qualify as a domestic industry under the "substantial investment" requirement; nor is there a need to define or quantify an industry in absolute mathematical terms. Rather, "the requirement for showing the existence of a domestic industry will depend on the industry in question, and the complainant's relative size. *Id.* at 14. Indeed, as explained in the *Navigation Devices* opinion, the Commission "has adopted a flexible approach whereby a complainant whose showing on one or more of the three section 337(a)(3)(C) requirements is relatively weak may nevertheless establish that its investment is "substantial" by demonstrating that its activities and/or expenses are of a large magnitude." *Navigation Devices,* Comm'n Op. at 7 (footnote omitted). The type of efforts that are considered a "substantial investment" under section 337(a)(3)(C) will vary depending on the nature of the industry and the resources of the complainant." *Id.*

Thus, the Commission has stated that:

> Other factors that might be relevant in determining whether a complainant's investment is substantial are (1) the existence of other types of "exploitation" of the asserted patent such as research, development, or engineering, (2) the existence of license-related ancillary activities such as ensuring compliance with license agreements and providing training or technical support to its licensees, (3) whether complainant's licensing activities are continuing, and (4) whether complainant's licensing activities are those that are referenced favorably in the legislative history of section 337(a)(3)(C). The complainant's return on its licensing investment (or lack thereof) may also be circumstantial evidence of the complainant's investment.

Id. at 7.

b. Summary of the Arguments of the Parties

Motorola argues that it (and its predecessor) have made, and continue to make, substantial investments in licensing the asserted patents. Motorola argues that it has developed "a robust intellectual property management and licensing business concerning its extensive portfolio of patents." Compls. Br. at 245-46. It is argued that although Motorola has more than 24,000 patents and patent applications worldwide, covering inventions in numerous industries, it traditionally enters into licenses covering [ ] It is further argued that from 2000 through February 2011, Motorola has received approximately [ ] in licensing revenue, and that cumulative royalties under licenses involving the asserted patents range from [ ] to [ ] Motorola argues that its licensing group directly employs [ ] people, [ ] of whom are located in the Untied States; and that in 2010, the combined salaries of [ ] people employed in the United States, who are involved in patent licensing activities, approximated [ ] It is argued that [ ] have also been spent in litigation and negotiations that have expanded Motorola's licensing. *Id.* at 244-50; Compls. Reply at 93-95. Further, it is argued that the evidence shows that Motorola's investments have the required nexus to licensing, the required nexus to the patents, and are substantial, in satisfaction of the domestic industry requirement. Compls. Br. at 250-55.

Microsoft argues that Motorola's licensing activities fail to establish a domestic industry. It is argued that few of Motorola's licenses identify specific patents, and fewer identify the asserted patents. Further, it is argued that Motorola has made no effort to allocate revenues and costs to specific asserted patents. Indeed, it is argued that most of

the licenses relied upon by Motorola were signed before 2007, while the alleged investment information is from a period of time after 2007. Microsoft argues that while Motorola's expenditures may be substantial in an absolute sense, they are not significant when viewed in terms of the asserted patents. Resp. Br. at 276-279; Resp. Reply at 94-96. Indeed, Microsoft argues, Motorola's evidence fails to show that the asserted patents were sufficiently important to Motorola's licensing activities, and fails to show that Motorola's litigation activity constitutes a domestic industry. Resp. Br. at 276-281.

c. Analysis and Conclusion on Licensing

An examination of the required nexus to the asserted patent, the nexus to licensing, and the and nexus to the United States must precede an evaluation of whether Motorola's investments are "substantial." *See Navigation Devices*, Comm'n Op. at 4.

Nexus to the Patents

Motorola has shown that there is a nexus between its licensing investments and each of the asserted patents.

Although not specifically called out in each license agreement, the '712 patent has been licensed at least [ ] times since 2000. CX-544C. Motorola's licensing activities with respect to the '712 patent are currently ongoing. Motorola recently concluded a license with [ ] that expressly includes the '712 patent. CX-778C (Dailey RWS) at and 23; CX-782C at 29. [ ]. CX-789C. Other licensing discussions involving the '712 patent are taking place with [ ] and [ ]. CX-715C (Dailey WS) at 17-19, 21; CX-714C (Leonard WS) at 15-16.

The importance of the '712 patent is further demonstrated by the fact that it has been incorporated into many wireless communication protocols. It is and/or has been declared essential to at least the 3G, 3GPP LTE, UMTS, 802.16 WiMax Profile Annex and WLAN 802.11 standards. CX-586C; CX-715C (Dailey WS) at 19; CX-714C (Leonard WS) at 11. The '712 patent is one of relative few patents that [ ] CX-715C (Dailey WS) at 22.

Motorola also has identified the '571 and '896 patents as essential to the 802.11 standard. CX-715C (Dailey WS) at 19; CX-714C (Leonard WS) at 11. Both of these patents are also among the relatively few that Motorola [ ] CX-715C (Dailey WS) at 22. The technology in the '896 patent was also incorporated into the widely-used Bluetooth wireless protocol. CX-712C (Madisetti) 3-4; Leeper Tr. 138-139. The '571 and '896 patents have been licensed approximately [ ] times each as part of Motorola's 802.11-essential patent portfolio. CX-714C (Leonard WS) at 13-14. In fact, [ ] of Motorola's executed license agreements and license negotiations since 2007 have included the '571 and '896 patents as essential patents in the 802.11 portfolio. Dailey Tr. 2570.

Motorola is currently in negotiations with handset makers [ ], and [ ] regarding a license to the '571 and '896 patents. CX-715C (Dailey WS) at 17-19, 21; CX-714C (Leonard WS) at 15-16. [ ]. CX-789C. [ ] also obtained a license in [ ] to Motorola's 802.11 patents (expressly including the '571 and

'896 patents), stating it intended to create 802.11-compliant [ ]. Dailey Tr. 65-67; CX-782C at 30. [ ] currently is making other 802.11-compliant products, including a [ ]. *See, e.g.*, CX-844; Dailey Tr. 2589.[106]

Motorola has declared and licensed the '596 and '094 patents as essential to the H.264 video coding standard. CX-715C (Dailey WS) 19; CX-714C (Leonard WS) 11. Both of these patents are among the relative few that Motorola [ ] CX-715C (Dailey WS) at 22. The '596 and '094 patents have been licensed approximately [ ] times each. CX-544C. [ ] of Motorola's executed license agreements and license negotiations since 2007 have involved the '596 and '094 patents as part of the H.264 and video coding patent portfolios, including agreements reached with major handset manufacturers such as [ ] and [ ]. *See* Dailey Tr. 62, 2570. Motorola is currently in negotiations with handset makers [ ], and [ ] regarding a license to the '596 and '094 patents. CX-715C (Dailey WS) at 17-19, 21. Furthermore, [ ] licensing request and subsequent agreement explicitly referenced Motorola's H.264 patents (including the '596 and '094 patents) for use in future products. Dailey Tr. 65-67; CX-782C at 22.

Nexus to Licensing

The investments relied upon by Motorola overwhelmingly pertain to licensing. There is little dispute as to that fact. Motorola does, however, include litigation within its licensing argument. Specifically, Motorola references litigation against RIM and Apple

[106] This "production-driven" licensing activity connected with the [ ] agreement is precisely the type that Congress intended to encourage. *See Navigation Devices*, Comm'n Op. at 12.

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in litigation, and in particular the fact that the RIM litigation led to a license of Motorola's entire [ ]. Compls. Br. at 251. Motorola has not, however, made a connection between specific litigation expenses and licensing. Rather, it appears that the license in question may have arisen simply as an outcome of litigation. *See Mezzalingua*, 660 F.3d at 1328-29.

Nexus to the United States

It has not been disputed that Motorola's licensing investments have been made almost entirely in the United States. The record evidence supports such a nexus. *See, e.g.*, CX-715C (Dailey WS) at 9-10; CX-542; CX-555C; CX-714C (Leonard WS) 6-8.

Whether the Investments Are Substantial

Motorola argues that "the magnitude of its licensing investments is sufficiently large as to overcome any possible concerns about the strength of the nexus." Compls. Br. at 253 (relying on *Navigation Devices*). While the legal principle cited by Motorola is correct, *see Navigation Devices*, Comm'n Op. at 7, as indicated above, the evidence also shows a strong nexus between Motorola licenses and the asserted patents. Although the asserted patents are only five of many patents owned and licensed by Motorola, they play an important part in Motorola's licensing business. In any event, Motorola's investments in licensing are quite large. The investments are so large, that even when one considers only investments made since 2007, as argued by respondent, the evidence shows that the investments are substantial.

As argued by Motorola, its licensing group currently employs [ ] people, [ ] of whom are located in the United States. CX-715C (Dailey WS) at 9; CX-555C; CX-714C (Leonard WS) 6-7. When one includes employees in other Motorola departments (such

as the legal department) who perform at least some activities in support of licensing, the total is [ ] employees, who earned [ ] in salary in 2010.[107] CX-685C; CX-715C (Dailey WS) 9-10; CX-542C; CX-714C (Leonard WS) at 6-8. The result of Motorola's licensing investments is [ ] every year in royalties paid under licenses that cover the each of the asserted patents, with cumulative royalty revenues in the decade before the complaint was filed that ranged from [ ] (attributed to the [ ] licenses that cover the '596 and '094 patents) to [ ] (attributed to the '712 patent, which is covered by [ ] licenses relied upon by Motorola's expert). *See* CX-682C; CX-683C; CX-715C (Dailey WS) at 12; CX-544C; CX-714C (Leonard WS) at 13-14.

Accordingly, it is found that Motorola's investments in licensing are substantial, including the licensing of each asserted patent. Thus, Motorola has satisfied the domestic industry requirement as to each asserted patent by exploiting that patent through licensing.

2. Engineering and R&D

a. The Legal Standard Applied to Engineering and R&D

Section 337(a)(3)(C) lists engineering and R&D, along with licensing, as areas in which substantial investment may satisfy the domestic industry requirement. As indicated above in the discussion of licensing, the Commission "has adopted a flexible approach whereby a complainant whose showing on one or more of the three section

[107] Notwithstanding the litigation against RIM, at least [ ] Motorola employees were directly or indirectly involved in the negotiations with RIM, which began in mid-2007 and culminated in the aforementioned license agreement. *See* CX-715C (Dailey WS) at 15; CX-714C (Leonard WS) at 20-21.

337(a)(3)(C) requirements is relatively weak may nevertheless establish that its investment is 'substantial' by demonstrating that its activities and/or expenses are of a large magnitude." *Navigation Devices*, Comm'n Op. at 7 (footnote omitted). "The type of efforts that are considered a 'substantial investment' under section 337(a)(3)(C) will vary depending on the nature of the industry and the resources of the complainant." *Id.*

For example, in some cases, the Commission has considered work performed by contractors when assessing the strength of a complainant's case. *See Certain GPS Chips, Associated Software and Systems, and Products Containing Same*, Inv. No. 337-TA-596, Order No. 37 (Initial Determination), 2008 WL 838257, at 2 (Feb. 27, 2008) (and cases cited therein) (recognizing work performed by contractors as sufficient to support a domestic industry), Notice of Comm'n Decision Not to Review (Mar. 20, 2008). In other circumstances, the Commission has found that domestic R&D expenditures directed to products that incorporate the patented technologies at issue are sufficient to satisfy the economic prong of the domestic industry requirement under 337(a)(3)(C). *See, e.g.*, *Certain NOR and NAND Flash Memory Devices and Products Containing Same*, Inv. No. 337-TA-560, Order No. 37 at 6 (Nov. 17, 2006), Notice of Comm'n Decision Not to Review (Dec. 8, 2006).

b. Summary of the Arguments of the Parties

Motorola argues that it "commits substantial resources to engineering and [R&D] efforts to create new products and improve current products that practice the Asserted Patents." Compls. Br. at 255. It is argued that "Motorola's substantial investment in product-specific engineering and R&D related to its Droid 2 and Droid X products in the United States satisfies the economic prong of the domestic industry products with regard

to the '712, '571, and '896 patents." *Id.* at 256. With respect to the '596 and '094 patents, Motorola relies on R&D related to VIP12XX series set-top boxes. *Id.* at 260; Compls. Reply at 96.

Microsoft argues that Motorola cannot establish that a domestic industry exists based on non-licensing activities. Resp. Br. at 281 (combining all non-licensing arguments in one section). It is argued that Motorola failed to allocate its activities and expenditures properly to the specific products alleged to practice the asserted patents, and failed to show substantial non-licensing investment in the exploitation of the patents under section 337(a)(3)(C). *Id.* at 282; Resp. Reply at 96-97.

c. Analysis and Conclusions on Engineering and R&D

Engineering and R&D Related to Droid X and Droid 2 Products

The initial step in the manufacturing process of the Droid X and Droid 2 is the [ ]. Although some [ ] are made in [ ], a significant proportion of [ ] prototypes are developed and made in the United States during the R&D stage, in Motorola's facilities in [ ]. CX-716C (Deardorff WS) at 5; CX-714C (Leonard WS) 24. Motorola has incurred equipment and materials costs (excluding personnel costs) of [ ] associated with the domestic development of [ ] for its Droid 2 and Droid X products. CX-716C (Deardorff WS) at 5; CX-690C at 1, 3-5; CX-714C (Leonard WS) at 24.

Additionally, Motorola conducts the majority of its product-specific R&D for the Droid X and Droid 2 in the United States. For example, from 2009 through February 2011, U.S. employees accounted for [ ] of the total time spent on R&D related to

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these products. CX-716C (Deardorff WS) at 4; CPX-19C; CX-549C; CX-714C (Leonard WS) 27-28. During that time, Motorola employees worked approximately [ ] hours in the United States on product-specific R&D related to the Droid X and Droid 2 products (without regard to the earlier handsets, which may have provided a foundation for the Droid X and Droid 2 projects). CX-716C (Deardorff WS) at 4; CPX-19C; CX-550C; CX-714C (Leonard WS) 25-26.

In 2010, at least [ ] Motorola employees performed these R&D activities in at least [ ] facilities across the United States, including facilities in [ ]. CX-716C (Deardorff WS) at 3-4; CPX-19C; CX-546C; CX-714C (Leonard WS) 27-29. Motorola spent approximately [ ] on employee expenses for the aforementioned domestic R&D related to the Droid X and Droid 2. CX-716C (Deardorff WS) at 4; CPX-19C; CX-551C; CX-714C (Leonard WS) 25-26.

Post-assembly engineering, programming and testing related to the Droid X and Droid 2 also take place in the United States. While the physical assembly of all Motorola handsets for commercial sale occurs in [ ], the handsets are not usable by carriers and consumers until the post-assembly loading of vendor-specific software and testing has taken place. CX-716C (Deardorff WS) at 6; CX-714C (Leonard WS) 29-30. These post-assembly activities occur for all handsets sold in the United States at a facility owned by a Motorola contractor, [ ], in [ ]. CX-716C (Deardorff WS) at 6; CX-714C (Leonard WS) 29. After software installation, the handsets undergo 30 to 45 minutes of [ ] testing at the [ ] facility. CX-716C (Deardorff WS) at 6. After the software is loaded, and testing is complete, [ ]

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packages the handsets individually and distributes them to carriers and consumers from the [ ] facility. CX-716C (Deardorff WS) at 6; CX-714C (Leonard WS) 29.

In 2010, Motorola incurred [ ] in total expenses associated with activities in [ ], including expenses for [ ] Motorola personnel involved in managing and supporting these activities. CX-716C (Deardorff WS) at 6-7; CX-691C at 1-3; CX-553C; CX-714C (Leonard WS) 30, 32. While these expenses relate to production and distribution operations for all handsets sold in the United States over this period, Droid 2 and Droid X collectively account for [ ] of such sales. CX-716C (Deardorff WS) at 7; CX-715C (Dailey WS) 6; CX-553C; CX-714C (Leonard WS) 30, 32. Thus, during this period, Motorola incurred over [ ] in final production, testing, packaging and distribution activities in the U.S. associated with Droid X and Droid 2. *See* CX-716C (Deardorff WS) at 7; CX-553C; CX-714C (Leonard WS) 30.

Furthermore, Motorola invests [ ] in other domestic activities related to engineering for Droid 2 and Droid X, such as post-sale customer service, technical support, and warranty repair services. CX-716C (Deardorff WS) at 7-12; CX-714C (Leonard WS) 32-37. These expenses include costs for Motorola engineers as well as third-party contractors. CX-716C (Deardorff WS) at 10-12; CX-714C (Leonard WS) 35-38. Employees in Motorola's warranty operations and post-sales support departments provide input during the product development process on design features and assembly procedures, and monitor product quality throughout the product's lifecycle to help improve product performance and customer satisfaction. CX-716C (Deardorff WS) at 13; CX-714C (Leonard WS) 40.

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Motorola's domestic investments in engineering and R&D related to the Droid 2 and Droid X are substantial, both in terms of the amount of expenditures that Motorola has made, and in terms of the value added, to the amount devices alleged to practice three of the asserted patent. Without Motorola's domestic engineering and R&D, the final manufactured Droid 2 and Droid X products would not function properly. Without the aforementioned investments, if the Droid 2 and Droid X products existed, their existence would have been due to substantial expenditures made overseas rather in the United States. Due to its substantial investment in engineering and R&D, Motorola has satisfied the economic prong of the domestic industry requirement for the '712, '571, and '896 patents.

R&D Related to VIP12XX Set-Top Boxes

The current circumstances relevant to Motorola's VIP12XX set-top boxes in many ways stand in contrast to those of the vibrant economic circumstances surrounding the Motorola Droid products, discussed above. Motorola admits in its brief that the VIP12XX set-tops boxes represent a "mature" product line.[108] Compls. Br. at 260 n.118 (quoting Richards Tr. 96, 99). Respondent favors the use of other quotes by Motorola personnel at the hearing to the effect that the VIP12XX is [ ] is in a [ ] that [ ] and that there is [ ] with respect to these set-top boxes. Resp. Br. at 283-84 (quoting Richards Tr. 86, 96).

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[108] There is no dispute that the VIP12XX set-top boxes are made in [ ]. Richards Tr. 98.

Motorola urges that the Commission to look not only at Motorola's current investments with respect to the VIP12XX, but also to its R&D investments in the past, and to vaguely described "next generation" set-top boxes that "employ the H.264 technology at issue." Motorola conspicuously does not rely on both engineering and R&D, as it does in relation to the Droid products, but rather expressly relies only on R&D.[109] Motorola Br. at 261-62. Yet, Motorola reaches back as far as 2005 to gather together expenditures in support of its arguments, without explaining why there should be an economic continuity between R&D that may have taken place seven years ago and a product that is nearing its end. Motorola also fails to explain the connection of the current VIP12XX set-top boxes to next generation products. In its post-hearing brief, Motorola provides no technical argument relating to next generation products; and based on the vague description of such products, it appears that respondent correctly argues that next generation products were excluded from Motorola's pre-hearing brief. Consequently, the question presented is not whether an industry relating to the VIP12XX set-top boxes is in decline, or whether an industry is in the making with respect to a new generation of set-top boxes. Rather, the question is whether there still is a domestic industry based on R&D relating to the products relied upon by Motorola, which are the VIP12XX set-top boxes.

The evidence reveals that little, if any, R&D (or any other type of engineering) is taking place in the United States with respect to the VI12XX set-top boxes. It is hard to discern any R&D expenditures that are currently taking place, or that took place

[109] In particular, Mr. Richards, Motorola's economic witness on the '094 and '596 patents testified that in his analysis, he did not rely on repairs. *See* Richards Tr. 78.

approximately at the time that the complaint was filed. Even in its reply, when faced with Microsoft's challenge to a current domestic industry, Motorola aggregates any current R&D expenditures with past years and the development of future products. Compls. Reply at 65-96. Yet, what is clear from the record is that, with respect to the VIP12XX set-top boxes,[ ] individuals are currently assigned to what may be term R&D. Further, requests for technical assistance regarding the VIP12XX products have dwindled to, at best, [ ] each month. *See* Richards Tr. 94-98.

Accordingly, it has not been shown that, based on investments in R&D, the economic prong of the domestic industry requirement is satisfied with respect to the '596 and '094 patents.

B. Section 337(a)(3)(A) and (B)

1. The Legal Standard Applied to section 337(a)(3)(A) and (B)

As indicated in section I.D. of this Initial Determination, to determine whether a complainant's investments are "significant" under section 337(a)(3)(A) and (B), the Commission examines the facts in each investigation, the article of commerce, and the realities of the marketplace, as well as the nature of the investment and/or employment activities in the industry in question, and the complainant's relative size. *Printing and Imaging Devices*, Comm'n Op. at 27.

In determining whether a complainant's activities are significant with respect to the articles protected by the intellectual property right concerned, the Commission has considered, among other things, the value added to the article in the United States by the domestic activities; the relative domestic contribution to the protected article by comparing complainant's product-related domestic activities to its product-related foreign

activities; and the nature of complainant's activities to determine whether they are directed to the practice of one or more claims of the asserted patent. *Id.* at 27-28.

2. Summary of the Arguments of the Parties

Motorola devotes only two paragraphs of its main brief to the question of whether it has satisfied the requirements of section 337(a)(3)(A) and (B) as to each asserted patents, and relies primarily on the showings it made relative to section 337(a)(3)(C). Motorola argues that its "aforementioned activities, in combination with other evidence introduced by Motorola, also show that Motorola satisfies the economic domestic industry requirement for each of the Asserted Patents under prongs (A) and (B). Motorola's domestic activities constitute significant investments in plant and equipment and significant employment of labor and capital relating to the Droid 2, Droid X, and VIP12XX products that are protected by the asserted patents." Compls. Br. at 261-62 (citing CX-716C (Deardorff WS) at 7-14; CX-717C (Richards WS) at 3-6; and CX-714C (Leonard WS) 28-29, 44-46)). It is argued that "[t]he sophisticated domestic activities undertaken by Motorola employees and contractors add significant value to Droid 2, Droid X, and VIP12XX products as compared to the assembly work done overseas concerning those products, *e.g.,* developing and designing the products, rendering the products operational by loading and testing software, as well as other high-value activities." *Id.* Motorola provides few specific arguments in its reply. *See* Compls. Reply at 96-97.

Microsoft argues that Motorola failed to establish a domestic industry based on non-licensing activities. Although Microsoft combines a discussion of section 337(a)(3)(A) and (B) with non-licensing activities under section 337(a)(3)(C), with

respect to the former statutory provisions, Microsoft clearly faults Motorola's reliance on the VP 12XX set-top boxes because those products are at their end of life cycle, and few employees work with the products in the United States; and Microsoft faults Motorola for failing to correlate the employees and facilities specifically to the Droid X and Droid 2 products. Resp. Br. at 281-285. Microsoft objects to any reliance by Motorola on "next generation" set-top boxes or repair services (discussed above with respect to engineering and R&D), arguing that such products were raised only after pre-hearing briefs were filed. Resp. Reply at 96-97.

3. Analysis and Conclusion under section 337(a)(3)(A) and (B)

Motorola has not focused its arguments under section 337(a)(3)(C) to show with specificity how large an investment it has made in plant and equipment, or provided details about the employment of labor or capital.[110] Moreover, Motorola's briefing does not show how economic evidence presented in the context of section 337(a)(3)(C) translates to the requirements of section 337(a)(3)(A) or (B), or how the evidence breaks down by patent.

Accordingly, it has not been shown by a preponderance of the evidence that the economic prong of the domestic industry requirement, as set forth in section 337(a)(3)(A) or (B), is satisfied.

[110] In response to Microsoft's brief, Motorola admits that most of the VIP12XX set-top boxes are shipped directly from [ ] to customers in the United States, such as AT&T, while others are shipped through a facility in [ ]. Yet, Motorola erroneously argues that this disparity between foreign and domestic operations is of little importance, and does not provide details about the [ ] facility. *See* Compls. Reply at 96.

C. Conclusions on Domestic Industry

Accordingly, for the reasons set forth above, the following domestic industry findings are made.

With respect to the '896 patent, it has been shown that a domestic industry exists under section 337(a)(3)(C) based on licensing, and based on engineering and R&D. The technical prong of the domestic industry requirement has been satisfied, but it has not been shown that the economic prong has been satisfied with respect to section 337(a)(3)(A) or (B).

With respect to the '094 patent, it has been shown that a domestic industry exists under section 337(a)(3)(C) based on licensing, but not based on R&D. The technical prong of the domestic industry requirement has been satisfied, but it has not been shown that the economic prong has been satisfied with respect to section 337(a)(3)(A) or (B).

With respect to the '596 patent, it has been shown that a domestic industry exists under section 337(a)(3)(C) based on licensing, but not based on R&D. The technical prong of the domestic industry requirement has been satisfied, but it has not been shown that the economic prong has been satisfied with respect to section 337(a)(3)(A) or (B).

With respect to the '571 patent, it has been shown that a domestic industry exists under section 337(a)(3)(C) based on licensing, and based on engineering & R&D. The technical prong of the domestic industry requirement has been satisfied, but it has not been shown that the economic prong has been satisfied with respect to section 337(a)(3)(A) or (B).

With respect to the '712 patent, it has been shown that a domestic industry exists under section 337(a)(3)(C) based on licensing, and engineering and R&D. The technical

prong of the domestic industry requirement has not been satisfied, and it has not been shown that the economic prong has been satisfied with respect to section 337(a)(3)(A) or (B).

XII. Conclusions of Law

1. The Commission has subject matter, personal, and *in rem* jurisdiction in this investigation.

2. The importation requirement is satisfied.

3. Respondent's accused products infringe asserted claims 1 and 12 of the '896 patent.

4. Respondent's accused products infringe asserted claims 7, 8, and 10 of the '094 patent.

5. Respondent's accused products infringe asserted claims 1 and 2 of the '596 patent.

6. Respondent's accused products infringe asserted claims 12 and 13 of the '571 patent.

7. Respondent's accused products do not infringe asserted claims 6, 8, and 17 of the '712 patent.

8. It has not been shown by clear and convincing evidence that any asserted claim of the '896, '094, '571, or the '712 patents is invalid.

9. It has been shown by clear and convincing evidence that asserted claim 1 of the '596 patent is invalid as anticipated. It has not been shown by clear and convincing evidence that asserted claim 2 is invalid as anticipated.

10. The domestic industry requirement is satisfied with respect to all asserted patents.

11. Respondent has not prevailed on any equitable or RAND defense.

XIII. Initial Determination and Order

Accordingly, it is the INITIAL DETERMINATION of the undersigned that a violation of section 337 (19 U.S.C. § 1337) has occurred in the importation into the United States, the sale for importation, or the sale within the United States after importation of certain gaming and entertainment consoles, related software, and components thereof, with respect to asserted claims 1 and 12 of U.S. Patent No. 6,069,896; asserted claims 7, 8, and 10 of U.S. Patent No. 7,162,094; claim 2 of U.S. Patent No. 6,980,596; and asserted claims 12 and 13 of U.S. Patent No. 5,357,571. A violation of section 337 has not occurred with respect to asserted claim 1 of U.S. Patent No. 6,980,596, or asserted claims 6, 8, or 17 of U.S. Patent No. 5,319,712.

Further, this Initial Determination, together with the record of the hearing in this investigation consisting of (1) the transcript of the hearing, with appropriate corrections as may hereafter be ordered, and (2) the exhibits received into evidence in this investigation, is CERTIFIED to the Commission.

In accordance with 19 C.F.R. § 210.39(c), all material found to be confidential by the undersigned under 19 C.F.R. § 210.5 is to be given *in camera* treatment.

The Secretary shall serve a public version of this ID upon all parties of record and the confidential version upon counsel who are signatories to the Protective Order, as amended, issued in this investigation.

To expedite service of the public version, each party is hereby ORDERED to file with the Commission Secretary by no later than May 7, 2012, a copy of this Initial Determination with brackets that show any portion considered by the party (or its suppliers of information) to be confidential, accompanied by a list indicating each page on which such a bracket is to be found. At least one copy of such a filing shall be served upon the office of the undersigned, and the brackets shall be marked in red. If a party (and its suppliers of information) considers nothing in the Initial Determination to be confidential, and thus makes no request that any portion be redacted from the public version, then a statement to that effect shall be filed.

Pursuant to 19 C.F.R. § 210.42(h), this Initial Determination shall become the determination of the Commission unless a party files a petition for review pursuant to § 210.43(a) or the Commission, pursuant to § 210.44, orders on its own motion a review of the ID or certain issues herein.

David P. Shaw
Administrative Law Judge

Issued: April 23, 2012

CERTAIN GAMING AND ENTERTAINMENT CONSOLES, RELATED SOFTWARE, AND COMPONENTS THEREOF **337-TA-752**

PUBLIC CERTIFICATE OF SERVICE

I, Lisa R. Barton, hereby certify that the attached **INITIAL DETERMINATION ON VIOLATION** has been served upon the following parties as indicated, on May 11, 2012.

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CERTAIN GAMING AND ENTERTAINMENT CONSOLES, RELATED SOFTWARE, AND COMPONENTS THEREOF **337-TA-752**

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